YAMAHA

OWNER'S MANUAL

⚠ Read this manual carefully before operating this vehicle.

PHAZER

Venture Lite

PZ50Y
PZ50RTY
PZ50GTY
PZ50MTY
PZ50VTY

LIT-12628-02-78

8GK-28199-12

ESU10041

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

YAMAHA LIT-CALIF-65-01

⚠ Read this manual carefully before operating this vehicle. This manual should stay with this vehicle if it is sold.

ESU10121

Congratulations on your purchase of a Yamaha snowmobile. This model is the result of Yamaha's vast experience in the production of fine sporting and touring snowmobiles. It represents the high degree of craftsmanship and reliability that have made Yamaha a leader in these fields.

This manual will give you an understanding of the operation, inspection, and basic maintenance of this snowmobile. If you have any questions concerning the operation or maintenance of your snowmobile, please consult a Yamaha dealer.

Yamaha continually seeks advancements in product design and quality. Therefore, while this manual contains the most current product information available at the time of printing, there may be minor discrepancies between your snowmobile and this manual. If there is any question concerning this manual, please consult a Yamaha dealer.

EWS00670

⚠ WARNING

Please read this manual carefully before operating this snowmobile. Do not attempt to operate this snowmobile until you have attained adequate knowledge of its controls and operating features.

Regular inspections and careful maintenance, along with good operating techniques, will help ensure that you safely enjoy the capabilities and reliability of this snowmobile.

PZ50Y
PZ50RTY
PZ50GTY
PZ50MTY
PZ50VTY
OWNER'S MANUAL
©2008 by Yamaha Motor Corporation, U.S.A.
1st Edition, May 2008
All rights reserved.
Any reprinting or unauthorized use without the written permission of Yamaha Motor Corporation, U.S.A. is expressly prohibited.
Printed in Japan.
P/N LIT-12628-02-78

Important manual information

ESU10151

Particularly important information is distinguished in this manual by the following notations.

⚠ This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

EWS00021

⚠ WARNING

A WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

ECS00011

NOTICE

A NOTICE indicates special precautions that must be taken to avoid damage to the snowmobile or other property.

TIP

A TIP provides key information to make procedures easier or clearer.

Contents

Location of the important labels 1

Safety information 5

Description 7

Control functions 10
- Main switch 10
- Throttle lever 10
- Engine overheating prevention system 10
- Throttle override system (T.O.R.S.) 10
- Speedometer unit 11
- High beam indicator light 13
- Low coolant temperature indicator light 13
- Knock control system “KCS” indicator light 13
- Drive “D” and reverse “R” indicator lights (PZ50RT / PZ50GT / PZ50MT / PZ50VT) 14
- Fuel meter and grip/thumb warmer level indicator 14
- Fuel level warning indicator 15
- Oil level warning indicator 16
- Coolant temperature warning indicator 16
- Self-diagnosis device 16
- Drive select switch (PZ50RT / PZ50GT / PZ50MT / PZ50VT) 17
- Engine stop switch 17
- Headlight beam switch “LIGHTS” 18
- Grip/thumb warmer adjustment switch 18
- Auxiliary DC jack (PZ50VT) 18
- Brake lever 19
- Parking brake lever 19
- Shroud latches (PZ50VT) 19
- Shroud and covers 20
- Drive guard 21
- V-belt holder (PZ50VT) 21
- Passenger grip warmer switch (PZ50VT) 22
- Backrest (PZ50VT) 22
- Storage pouch 22
- Rear carrier (PZ50VT) 23
- Fuel 24
- Suspension 25

Pre-operation checks 34
- Pre-operation check list 34

Operation 36
- Starting the engine 36
- Break-in 37
- Riding your snowmobile 37
- Maximizing drive track life 41
- Strap (PZ50MT) 41
- Driving 42
- Stopping the engine 43
- Transporting 43

Periodic maintenance and adjustment 45
- Periodic maintenance chart for the emission control system 45
- General maintenance and lubrication chart 47
- Tool kit 49
- Removing and installing the shroud and covers 49
- Checking the spark plugs 52
- Adjusting the engine idling speed 53
- Adjusting the throttle cable free play (PZ50 / PZ50RT / PZ50GT / PZ50MT) 54
- Checking the throttle cable free play (PZ50VT) 54
- Checking the throttle override system (T.O.R.S.) 54

Contents

Checking the air filter 55
High-altitude settings 56
Valve clearance 56
Engine oil and oil filter cartridge ... 56
Cooling system 60
V-belt 61
Drive chain housing 63
Brake and parking brake 64
Skis and ski runners 66
Steering system 67
Drive track and slide runners 68
High-profile pattern drive track 70
Lubrication 71
Replacing a headlight bulb 71
Adjusting the headlight beams 72
Fittings and fasteners 73
Battery 73
Replacing a fuse 74

Troubleshooting 76

Storage 79

Specifications 81

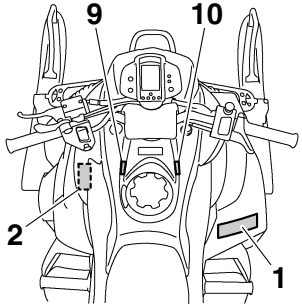
Consumer information 84
Identification number records 84
YAMAHA MOTOR CORPORATION, U.S.A. SNOWMOBILE LIMITED WARRANTY 85
YAMAHA EXTENDED SERVICE (Y.E.S.) 88

Location of the important labels

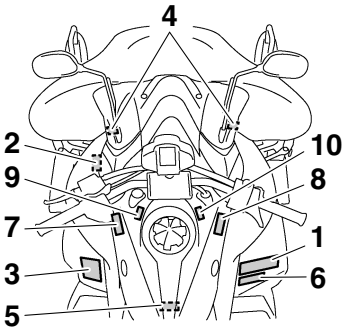
ESU10214

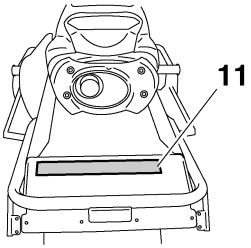
Read and understand all of the labels on your vehicle. They contain important information for safe and proper operation of your vehicle. Never remove any labels from your vehicle. If a label becomes difficult to read or comes off, a replacement label is available from your Yamaha dealer.

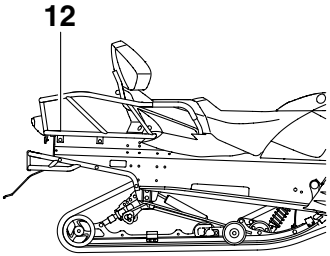
PZ50



PZ50RT/PZ50GT/PZ50MT/PZ50VT







Location of the important labels

1 PZ50

⚠ WARNING	⚠ AVERTISSEMENT
SEVERE INJURY OR DEATH MAY RESULT IF YOU IGNORE ANY OF THE FOLLOWING: • Read the Owner's Manual and all labels before operating this vehicle. • This vehicle is a high performance machine. It should be operated by an experienced operator. • Check throttle, brake, and steering for proper operation before starting engine. • Set parking brake before attempting to start engine. Never run this vehicle with the parking brake applied. • To stop engine in an emergency, push the engine stop switch down. • Do not operate engine without drive belt or drive guard. • Make sure the fuel tank cap is closed securely after refueling. • Do not operate this vehicle on public roads. You could collide with another vehicle. • This vehicle is designed for operator only – no passengers. • Wear an approved helmet, eye protection, and adequate clothing for snowmobiling.	AFIN D'ÉVITER TOUT RISQUE DE BLESSURE SÉRIEUSE OU MÊME MORTELLE, VEUILLEZ SUIVRE LES RECOMMANDATIONS SUIVANTES: • Avant d'utiliser ce véhicule, lire le manuel du propriétaire et toutes les étiquettes. • Ce véhicule est une machine à haute performance. Elle doit être conduite par un conducteur expérimenté. • Avant de démarrer le moteur, vérifier l'opération du frein, de l'accélérateur et de la direction. • Le frein de sécurité doit être appliqué lors du démarrage. Ne pas rouler avec le frein de sécurité actionné. • En cas d'urgence, utiliser l'interrupteur d'arrêt du moteur. • Ne pas laisser tourner le moteur sans la courroie ou sans son garde. • S'assurer que le bouchon du réservoir soit bien refermé après le remplissage. • Afin d'éviter tout risque de collision, ne pas rouler sur un chemin public. • Ce véhicule est conçu pour un conducteur seul – aucun passager. • Toujours porter un casque approuvé et un habillement de motoneigiste. Prévoir une protection pour les yeux. 8GC-77761-F0

1 PZ50RT/PZ50GT/PZ50MT

⚠ WARNING	⚠ AVERTISSEMENT
SEVERE INJURY OR DEATH MAY RESULT IF YOU IGNORE ANY OF THE FOLLOWING: • Read the Owner's Manual and all labels before operating this vehicle. • This vehicle is a high performance machine. It should be operated by an experienced operator. • Check throttle, brake, and steering for proper operation before starting engine. • Set parking brake before attempting to start engine. Never run this vehicle with the parking brake applied. • To stop engine in an emergency, push the engine stop switch down. • Do not operate engine without drive belt or drive guard. • Make sure the fuel tank cap is closed securely after refueling. • Do not operate this vehicle on public roads. You could collide with another vehicle. • This vehicle is designed for operator only – no passengers. • Check drive direction ("D" or "R" light on) before moving. • Wear an approved helmet, eye protection, and adequate clothing for snowmobiling.	AFIN D'ÉVITER TOUT RISQUE DE BLESSURE SÉRIEUSE OU MÊME MORTELLE, VEUILLEZ SUIVRE LES RECOMMANDATIONS SUIVANTES: • Avant d'utiliser ce véhicule, lire le manuel du propriétaire et toutes les étiquettes. • Ce véhicule est une machine à haute performance. Elle doit être conduite par un conducteur expérimenté. • Avant de démarrer le moteur, vérifier l'opération du frein, de l'accélérateur et de la direction. • Le frein de sécurité doit être appliqué lors du démarrage. Ne pas rouler avec le frein de sécurité actionné. • En cas d'urgence, utiliser l'interrupteur d'arrêt du moteur. • Ne pas laisser tourner le moteur sans la courroie ou sans son garde. • S'assurer que le bouchon du réservoir soit bien refermé après le remplissage. • Afin d'éviter tout risque de collision, ne pas rouler sur un chemin public. • Ce véhicule est conçu pour un conducteur seul – aucun passager. • Vérifier la direction de marche (témoin "D" ou "R" allumé) avant de conduire. • Toujours porter un casque approuvé et un habillement de motoneigiste. Prévoir une protection pour les yeux. 8GP-77761-F0

1 PZ50VT

⚠ WARNING	⚠ AVERTISSEMENT
SEVERE INJURY OR DEATH MAY RESULT IF YOU IGNORE ANY OF THE FOLLOWING: • Read the Owner's Manual and all labels before operating this vehicle. • This vehicle is a high performance machine. It should be operated by an experienced operator. • Check throttle, brake, and steering for proper operation before starting engine. • Set parking brake before attempting to start engine. Never run this vehicle with the parking brake applied. • To stop engine in an emergency, push the engine stop switch down. • Do not operate engine without drive belt or drive guard. • Make sure the fuel tank cap is closed securely after refueling. • Do not operate this vehicle on public roads. You could collide with another vehicle. • Check drive direction ("D" or "R" light on) before moving. • Wear an approved helmet, eye protection, and adequate clothing for snowmobiling.	AFIN D'ÉVITER TOUT RISQUE DE BLESSURE SÉRIEUSE OU MÊME MORTELLE, VEUILLEZ SUIVRE LES RECOMMANDATIONS SUIVANTES: • Avant d'utiliser ce véhicule, lire le manuel du propriétaire et toutes les étiquettes. • Ce véhicule est une machine à haute performance. Elle doit être conduite par un conducteur expérimenté. • Avant de démarrer le moteur, vérifier l'opération du frein, de l'accélérateur et de la direction. • Le frein de sécurité doit être appliqué lors du démarrage. Ne pas rouler avec le frein de sécurité actionné. • En cas d'urgence, utiliser l'interrupteur d'arrêt du moteur. • Ne pas laisser tourner le moteur sans la courroie ou sans son garde. • S'assurer que le bouchon du réservoir soit bien refermé après le remplissage. • Afin d'éviter tout risque de collision, ne pas rouler sur un chemin public. • Vérifier la direction de marche (témoin "D" ou "R" allumé) avant de conduire. • Toujours porter un casque approuvé et un habillement de motoneigiste. Prévoir une protection pour les yeux. 8GJ-77761-E0

2

⚠ WARNING

DO NOT OPERATE ENGINE WITHOUT V-BELT OR DRIVE GUARD.

⚠ AVERTISSEMENT

NE PAS FAIRE FONCTIONNER LE MOTEUR SANS COURROIE EN V OU PROTECTEUR D'EMBRAYAGE.

YAMAHA 8BD-77762-00

3 PZ50MT

⚠ WARNING

Improper use of **STRAP** on the handlebar can result in **SEVERE INJURY** or **DEATH**.

- Use strap only as an operator grip point to shift weight uphill to maintain balance during traverse (sidehill) riding.
- Keep one hand on handlebar. Do not change speed or direction abruptly.
- Only experienced operators should traverse slopes steep enough to require strap use.

⚠ AVERTISSEMENT

L'utilisation incorrecte de la **POIGNÉE SOUPLE** du guidon peut causer des **BLESSURES GRAVES** voire **MORTELLES.**

- S'agripper à la poignée seulement lors de la traversée latérale de pentes pour garder l'équilibre lorsque l'on déplace son poids du côté amont.
- Garder une main sur le guidon. Éviter toute accélération ou freinage brusques.
- La traversée de pentes dont la raideur requiert l'utilisation de la poignée est réservée aux pilotes expérimentés.

8GP-77761-00

4 PZ50GT

⚠ WARNING

This unit contains high pressure nitrogen gas.
Mishandling can cause explosion.
- Read owner's manual for instructions.
- Do not incinerate, puncture or open.

⚠ AVERTISSEMENT

Cette unité contient de l'azote à haute pression.
Une mauvaise manipulation peut entraîner d'explosion.
- Voir le manuel d'utilisateur pour les instructions.
- Ne pas brûler ni perforer ni ouvrir.

4AA-22259-70

5 PZ50RT/PZ50GT/PZ50MT

⚠ WARNING

This unit contains high pressure nitrogen gas.
Mishandling can cause explosion.
- Read owner's manual for instructions.
- Do not incinerate, puncture or open.

⚠ AVERTISSEMENT

Cette unité contient de l'azote à haute pression.
Une mauvaise manipulation peut entraîner d'explosion.
- Voir le manuel d'utilisateur pour les instructions.
- Ne pas brûler ni perforer ni ouvrir.

4AA-22259-60

4 PZ50RT

⚠ WARNING

This unit contains high pressure nitrogen gas.
Mishandling can cause explosion.
- Read owner's manual for instructions.
- Do not incinerate, puncture or open.

⚠ AVERTISSEMENT	⚠ 警 告
Cette unité contient de l'azote à haute pression. Une mauvaise manipulation peut entraîner d'explosion. • Voir le manuel d'utilisateur pour les instructions. • Ne pas brûler ni perforer ni ouvrir.	高圧窒素ガス入りです。 取り扱いを誤ると爆発する恐れがあります。 • 取扱説明書をよく読んでください。 • 火中への投入、孔あけ、分解はしないでください。

8GT-F2259-50

6 PZ50MT

NOTICE	*ATTENTION*
This snowmobile is originally equipped with a 51mm (2.0in.) high-profile pattern track for deep snow riding conditions. Operation on light snowfall, ice, hard-packed snow, dirt, etc., will result in rapid wear or damage to track and slide runners.	Cette motoneige est équipée d'une chenille à relief de 51 mm (2,0 po) pour la neige profonde. La conduite sur de la neige peu profonde, de la glace, de la neige tassée, de la saleté, etc. provoquera une usure rapide ou l'endommagement de la chenille et des patins.

8HA-2815M-E0

Location of the important labels

7 PZ50RT/PZ50GT/PZ50MT/PZ50VT

NOTICE

- Cleaning with alkaline or acid cleaner, gasoline or solvent will damage windshield.
- Use neutral detergent.

8ET-2815K-00

8 PZ50RT/PZ50GT/PZ50MT/PZ50VT

ATTENTION

- Eviter de nettoyer le pare-brise avec une solution alcaline ou acide ainsi qu'avec de l'essence ou un diluant.
- Utiliser un détergent neutre.

8ET-2815K-10

9 PZ50/PZ50RT/PZ50GT/PZ50MT

⚠ WARNING

This vehicle is designed for operator only.
"NO PASSENGER"

8GC-77762-A0

10 PZ50/PZ50RT/PZ50GT/PZ50MT

⚠ AVERTISSEMENT

Ce véhicule est conçu pour ne transporter que le conducteur.
"AUCUN PASSAGER"

8GC-77762-B0

11 PZ50MT

⚠ WARNING	⚠ AVERTISSEMENT
NO PASSENGERS OR CARGO ON THIS TRACK COVER. It was not designed to carry weight. It could bend or break under load. Anything placed here could block the view of the brake/tail light which could cause an accident.	AUCUN PASSAGER OU MARCHANDISE SUR LE PROTECTEUR DE CHENILLE. Ce protecteur n'a pas été conçu pour supporter un poids. Il pourrait s'incurver ou se briser sous la charge. Tout objet ou personne placé à cet endroit pourrait bloquer la vue des feux d'arrêt/arrière et ainsi causer un accident.

8HA-77762-E0

12 PZ50VT

LOAD LIMIT / CHARGE LIMITE

20kg {44lbs}

8FM-24897-01

ESU10193

As the vehicle's owner, you are responsible for the safe and proper operation of your snowmobile. When you ride your snowmobile, you must know and use the following for your safety. Severe injury or death may result if you ignore any of the following.

Before you operate your snowmobile

- Read the Owner's Manual and all labels. Become familiar with all of the operating controls and their function. Consult a Yamaha dealer about any control or function you do not understand.
- Wear protective clothing. Wear an approved helmet, and a face shield or goggles. Also, wear a good quality snowmobile suit, boots, and a pair of gloves or mittens that will permit use of your thumbs and fingers for operation of the controls.

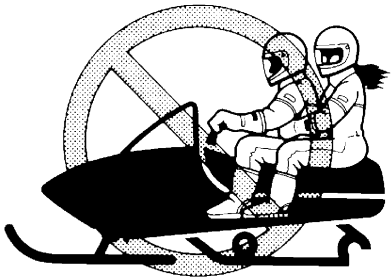
- Do not operate the snowmobile after or while drinking alcohol or taking drugs. Your ability to operate the snowmobile is reduced by the influence of alcohol or drugs.

Prepare your snowmobile

- Perform the pre-operation checks each time you use the vehicle to make sure it is in safe operating condition. Failure to inspect or maintain the vehicle properly increases the possibility of an accident or equipment damage. See page 34 for a list of pre-operation checks.
- Apply the parking brake before starting the engine. Never drive the snowmobile with the parking brake applied. This may overheat the brake disc and reduce braking ability.

While using your snowmobile

- This snowmobile was not manufactured for use on public streets, roads, or highways. Such use is prohibited by law, and you could collide with another vehicle.
- PZ50, PZ50RT, PZ50GT and PZ50MT are designed to carry the OPERATOR ONLY. Passengers are prohibited. Carrying a passenger can cause loss of control.



- Be careful where you ride. There may be obstacles hidden beneath the snow. Stay on established trails to minimize your exposure to hazards. Ride slowly and cautiously when you ride off of established trails. Hitting a rock or stump, or running into wires could cause an accident and injury.
- This snowmobile is not designed for use on surfaces other than snow or ice. Use on dirt, sand, grass, rocks, or bare pavement may cause loss of control and may damage the snowmobile.
- Always ride with other snowmobilers when going on a ride. You may need help if you run out of fuel, have an accident, or damage your snowmobile.

- Many surfaces such as ice and hardpacked snow require much longer stopping distances. Be alert, plan ahead and begin decelerating early. The best braking method on most surfaces is to release the throttle and apply the brake gently—not suddenly.

Avoid carbon monoxide poisoning

All engine exhaust contains carbon monoxide, a deadly gas. Breathing carbon monoxide can cause headaches, dizziness, drowsiness, nausea, confusion, and eventually death. Carbon monoxide is a colorless, odorless, tasteless gas which may be present even if you do not see or smell any engine exhaust. Deadly levels of carbon monoxide can collect rapidly and you can quickly be overcome and be unable to save yourself. Also, deadly levels of carbon monoxide can linger for hours or days in enclosed or poorly-ventilated areas. If you experience any symptoms of carbon monoxide poisoning, leave the area immediately, get fresh air, and SEEK MEDICAL TREATMENT.

- Do not run the engine indoors. Even if you try to ventilate engine exhaust with fans or open windows and doors, carbon monoxide can rapidly reach dangerous levels.
- Do not run the engine in poorly ventilated or partially enclosed areas such as barns, garages, or carports.
- Do not run the engine outdoors where engine exhaust can be drawn into a building through openings such as windows and doors.

Genuine Yamaha Accessories

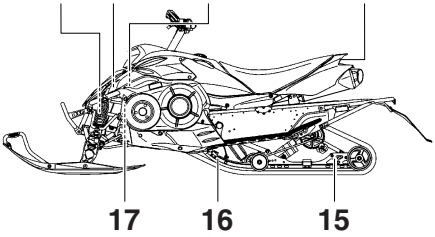
Choosing accessories for your snowmobile is an important decision. Genuine Yamaha Accessories, which are available only from a Yamaha dealer, have been designed, tested, and approved by Yamaha for use on your snowmobile. Many companies with no connection to Yamaha manufacture parts and accessories or offer other modifications for Yamaha vehicles. Yamaha is not in a position to test the products that these aftermarket companies produce. Therefore, Yamaha can neither endorse nor recommend the use of accessories not sold by Yamaha or modifications not specifically recommended by Yamaha, even if sold and installed by a Yamaha dealer.

Maintenance and storage

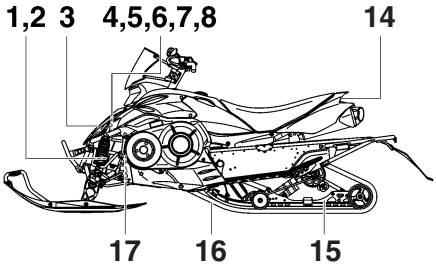
- When laying the snowmobile on its side for maintenance, use a suitable stand to keep it in a stable and level position.
- Do not leave the snowmobile on its left side for an extended period of time. Fuel may leak out from the fuel breather hose.
- Do not allow anyone to stand behind the snowmobile when starting, inspecting, or adjusting the snowmobile. A broken track, track fittings, or debris thrown by the track could be dangerous to the operator or bystanders.
- Modifications made to the snowmobile not approved by Yamaha, or the removal of original equipment may render your snowmobile unsafe for use, which may cause severe personal injury. Modifications may also make the snowmobile illegal to use.
- Never store the snowmobile with fuel in the fuel tank inside a building where ignition sources are present such as hot water and space heaters, an open flame, sparks, clothes dryers, and the like. Allow the engine to cool off before storing the snowmobile in an enclosed space.

ESU10260

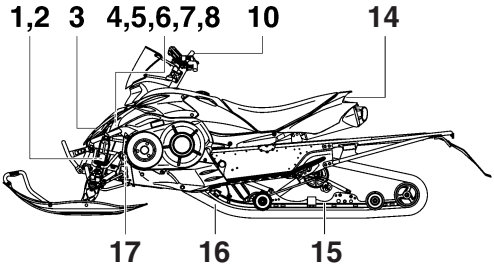
PZ50



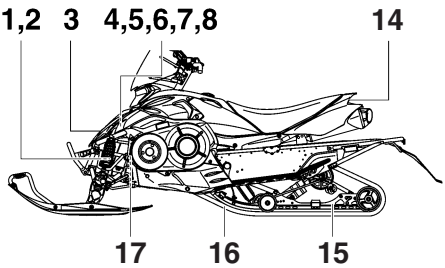
PZ50RT



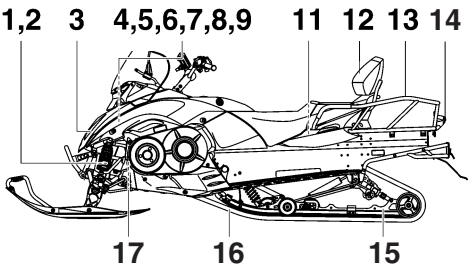
PZ50MT



PZ50GT



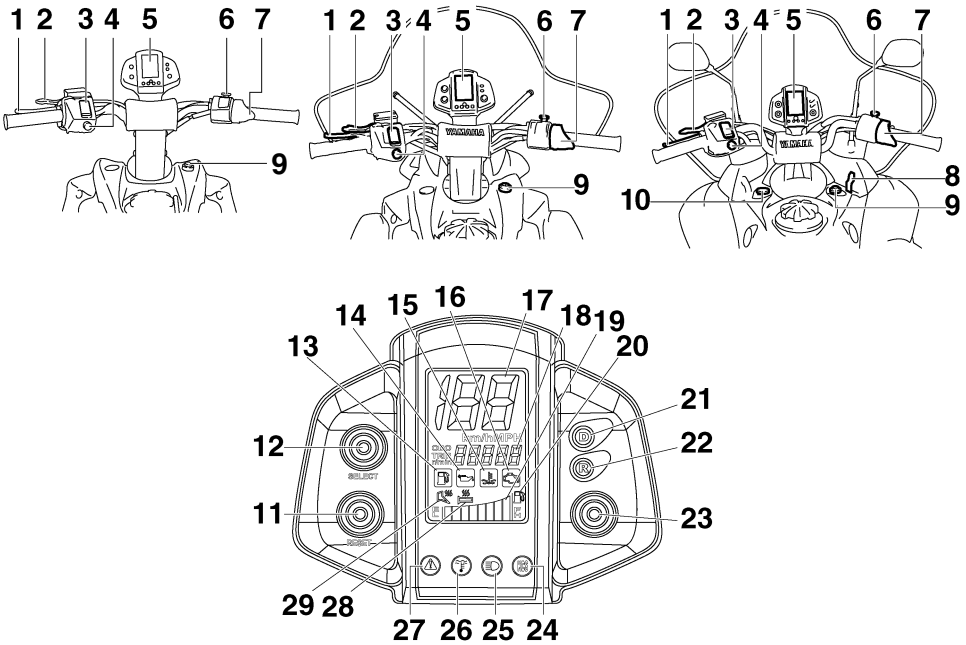
PZ50VT



1. Storage pouch
2. Tool kit
3. Air filter
4. Oil filler cap
5. Battery
6. Main fuse
7. Fuse box
8. Coolant reservoir
9. V-belt holder (PZ50VT)
10. Strap (PZ50MT)
11. Passenger grip warmer switch (PZ50VT)
12. Backrest (PZ50VT)
13. Rear carrier (PZ50VT)
14. Tail/brake light
15. Slide rail suspension
16. Drive track
17. Idle adjusting screw

Description

PZ50 **PZ50RT/PZ50GT/PZ50MT** **PZ50VT**



1. Brake lever
2. Parking brake lever
3. Grip/thumb warmer adjustment switch
4. Headlight beam switch
5. Speedometer unit
6. Engine stop switch
7. Throttle lever
8. Shroud latch (PZ50VT)
9. Main switch
10. Auxiliary DC jack (PZ50VT)
11. “RESET” button
12. “SELECT” button
13. Fuel level warning indicator
14. Oil level warning indicator
15. Coolant temperature warning indicator
16. Self-diagnosis warning indicator
17. Speedometer
18. Odometer/tripmeter/engine speed meter
19. Fuel meter and grip/thumb warmer level indicator
20. Fuel meter indicator
21. Drive “D” indicator light (PZ50RT / PZ50GT / PZ50MT / PZ50VT)
22. Reverse “R” indicator light (PZ50RT / PZ50GT / PZ50MT / PZ50VT)
23. Drive select switch (PZ50RT / PZ50GT / PZ50MT / PZ50VT)
24. Knock control system “KCS” indicator light
25. High beam indicator light
26. Low coolant temperature indicator light
27. Warning light
28. Grip warmer indicator
29. Thumb warmer indicator

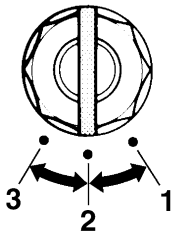
TIP

- The snowmobile you have purchased may differ slightly from those shown in the figures of this manual.
- Design and specifications are subjected to change without notice.

ESU10292

Main switch

The main switch controls the ignition and lighting systems. The various positions are described below.



1. Off
2. On
3. Start

Off

The ignition circuit is switched off.
The key can be removed only in this position.

On

The ignition circuit is switched on.

Start

The starting circuit is switched on.
The starter motor cranks the engine. ***NOTICE:*** **Release the switch immediately after the engine starts.** [ECS00021]

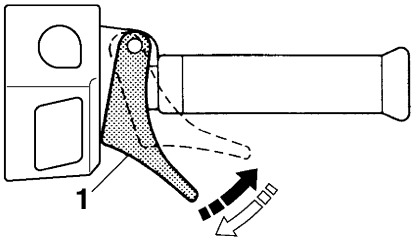
TIP

The headlights and taillight come on after the engine is started.

ESU10312

Throttle lever

Once the engine is running cleanly, squeezing the throttle lever will increase the engine speed and cause engagement of the drive train. Regulate the speed of the snowmobile by varying the throttle position. Because the throttle is spring-loaded, the snowmobile will decelerate, and the engine will return to idle when it is released.



1. Throttle lever

ESU10321

Engine overheating prevention system

This model is equipped with a system, which prevents overheating when the engine is idling.
When the engine has been idling for 3 minutes or longer and the coolant temperature has risen above 100 °C (212 °F), the engine automatically stops to prevent overheating.

TIP

The engine can be started after it stops.

ESU10345

Throttle override system (T.O.R.S.)

EWS00041

⚠ WARNING

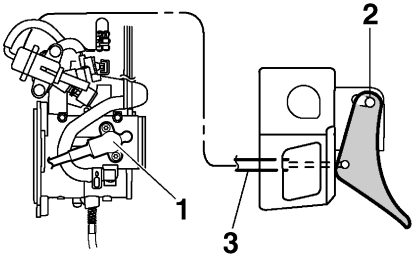
If the T.O.R.S. is activated, make sure that the cause of the malfunction has been corrected and that the engine can be operated without a problem before restarting the engine. Continuing to operate with a malfunction could cause loss of control or damage.

If the throttle bodies or throttle cable malfunctions during operation, the T.O.R.S. will operate when the throttle lever is released.
The T.O.R.S. is designed to override the fuel injection and limit the engine speed to less than the clutch engagement speed if the throt-

tle valves fail to return to the idle position when the throttle lever is released. (See page 81 for the clutch engagement speed.)

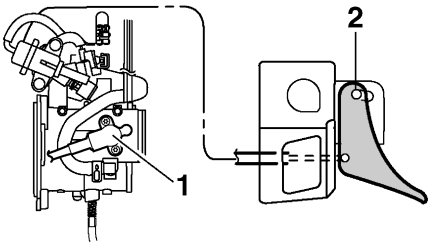
	Idling / starting	Running	Trouble
Throttle switch	Off	On	Off
Throttle position sensor	Closed	Open	Open
Engine	Run	Run	T.O.R.S. will operate.

Idling / starting



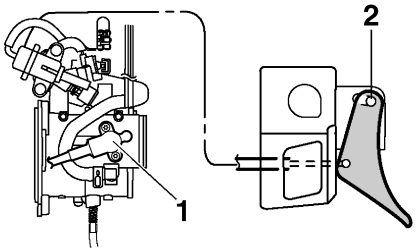
1. Throttle position sensor (throttle valve closed position)
2. Throttle switch (off)
3. Throttle cable

Running



1. Throttle position sensor (throttle valve open position)
2. Throttle switch (on)

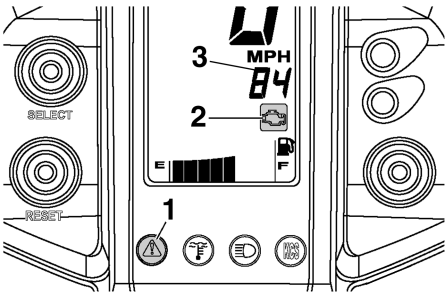
Trouble



1. Throttle position sensor (throttle valve open position)
2. Throttle switch (off)

TIP

- If the T.O.R.S. is activated, the warning light and self-diagnosis warning indicator will flash, and the two-digit code “84” will flash in the meter display.
- The T.O.R.S. monitors the condition of the throttle position sensor, speedometer assembly, and speed sensor, and will operate if any of the monitored items is disconnected or is malfunctioning.



1. Warning light “⚠”
2. Self-diagnosis warning indicator “🔧”
3. Two-digit code “84”

ESU10392

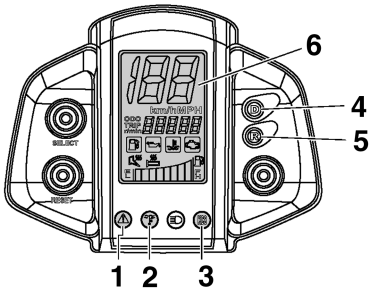
Speedometer unit

The speedometer unit is equipped with the following:

- a digital speedometer (which shows the riding speed)
- an odometer (which shows the total distance traveled)
- a tripmeter (which shows the distance traveled since it was last set to zero)
- an engine speed meter (which shows the engine speed; not for use while riding)
- warning indicators (which show self-diagnosis, coolant temperature, fuel level, and oil level warnings)
- indicator lights [which show high beam, low coolant temperature, transmission position (PZ50RT / PZ50GT / PZ50MT / PZ50VT), and knock control system conditions]
- a warning light (which shows warnings together with the warning indicators)
- a fuel meter (which shows the fuel remaining in the fuel tank)
- a grip/thumb warmer level indicator (which shows the grip warmer or the thumb warmer level)

When the key is turned to the on position, the warning light, the low coolant temperature indicator light, the knock control system "KCS" indicator light, the drive "D" and reverse "R" indicator lights (PZ50RT / PZ50GT / PZ50MT / PZ50VT), and all segments of the meter display come on and go off.

The grip warmer level is initially displayed for 5 seconds, then the display switches to the fuel meter.

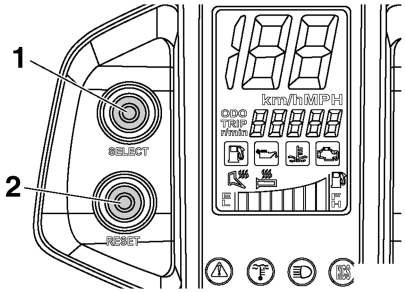


1. Warning light "⚠"
2. Low coolant temperature indicator light "≈"
3. Knock control system "KCS" indicator light
4. Drive "D" indicator light (PZ50RT / PZ50GT / PZ50MT / PZ50VT)
5. Reverse "R" indicator light (PZ50RT / PZ50GT / PZ50MT / PZ50VT)
6. Meter display

Odometer, tripmeter, and engine speed meter modes

Pushing the "SELECT" button switches the display between the odometer mode "ODO", tripmeter mode "TRIP", and engine speed meter mode "r/min".

To reset the tripmeter, push the "RESET" button for at least 1 second while the tripmeter is displayed.



1. "SELECT" button
2. "RESET" button

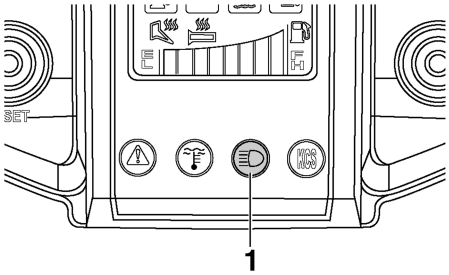
TIP

- To switch the speedometer, odometer, and tripmeter displays between kilometers and miles, select the odometer mode “ODO”, and then push the “SELECT” button for at least 10 seconds while the snowmobile is stopped.
- Use the engine speed meter only when checking the snowmobile and performing basic maintenance. The engine speed meter should not be used while riding the snowmobile since the reading will vary from the actual engine speed.

ESU10410

High beam indicator light “ ”

The high beam indicator light comes on when the high beams of the headlights are switched on. (See page 18 for headlight beam switch operation.)

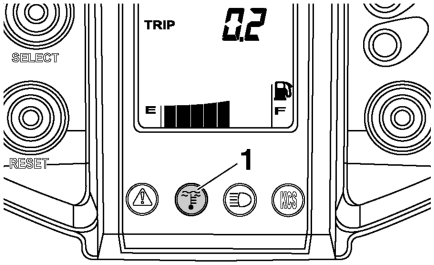


1. High beam indicator light “ ”

ESU10472

Low coolant temperature indicator light “ ”

The low coolant temperature indicator light comes on when the coolant temperature is low and informs the rider that the snowmobile should be warmed up. After the engine is started, warm it up until the indicator light goes off.



1. Low coolant temperature indicator light “ ”

The snowmobile can be operated normally after the indicator light goes off.

TIP

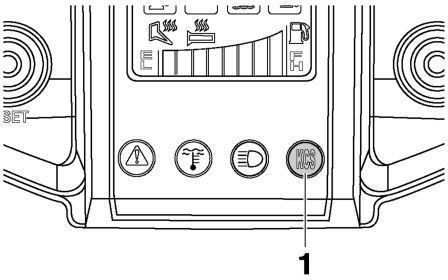
Drive the snowmobile at low speeds when the low coolant temperature indicator light is on. If the engine speed is too high, maximum engine speed is reduced to protect the engine.

ESU10500

Knock control system “KCS” indicator light

This snowmobile is equipped with a system which detects engine knocking in order to protect the engine from damage.

The knock control system “KCS” indicator light comes on if knocking is detected, then flashes if the knocking increases.



1. Knock control system “KCS” indicator light

After the knocking has stopped, the knock control system “KCS” indicator light goes off.

ECS00030

NOTICE

- **If the knock control system “KCS” indicator light comes on, the fuel tank may not have been filled with the recommended fuel. Reduce the engine speed to 6000 r/min or less. As soon as possible, stop the engine, let it cool sufficiently, and then drain the fuel and refuel with the recommended fuel.**
- **If the knock control system “KCS” indicator light is flashing, have a Yamaha dealer inspect the snowmobile as soon as possible.**

TIP

To help prevent knocking, use premium unleaded gasoline only. (See page 24 for more details.)

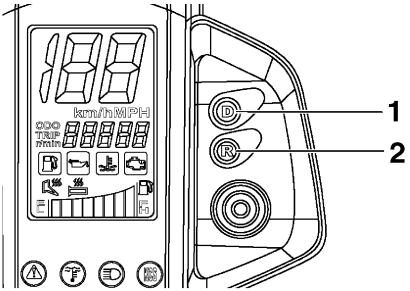
ESU10492

Drive “D” and reverse “R” indicator lights (PZ50RT / PZ50GT / PZ50MT / PZ50VT)

These indicator lights show whether the snowmobile is shifted into drive or reverse.

The drive “D” indicator light comes on when the transmission is in drive (forward).

The reverse “R” indicator light comes on when the transmission is in reverse.



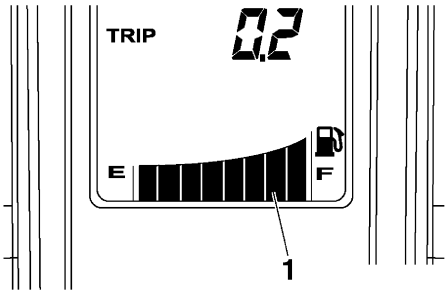
1. Drive “D” indicator light (PZ50RT / PZ50GT / PZ50MT / PZ50VT)
2. Reverse “R” indicator light (PZ50RT / PZ50GT / PZ50MT / PZ50VT)

The snowmobile can be shifted into drive or reverse by pushing the drive select switch. (See page 17 for drive select switch operation.)

ESU10433

Fuel meter and grip/thumb warmer level indicator

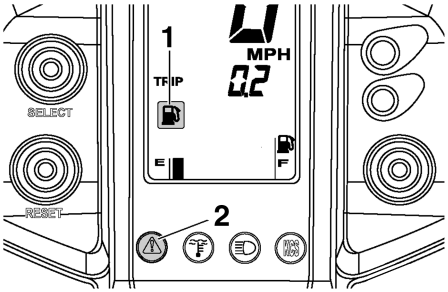
The fuel meter and grip/thumb warmer level indicator have eight segments which show the amount of fuel remaining in the fuel tank, the grip warmer level, or the thumb warmer level.



1. Fuel meter and grip/thumb warmer level indicator

Fuel meter

The display segments of the fuel meter disappear towards “E” (Empty) as the fuel level decreases. When only one segment is left near “E”, the fuel level warning indicator and the warning light come on.



1. Fuel level warning indicator “⛽”
2. Warning light “⚠”

If the fuel level warning indicator and the warning light come on, refuel as soon as possible.

TIP

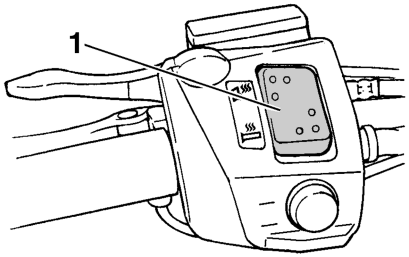
The snowmobile must be stopped on a level surface to obtain an accurate fuel meter reading, since the reading changes according to the movement and inclination of the snowmobile.

Grip/thumb warmer level indicator

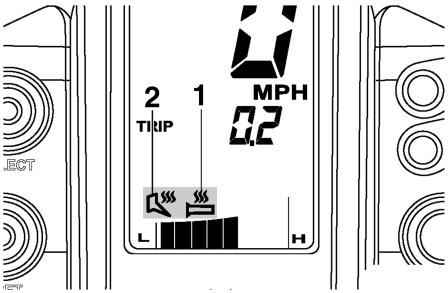
When the grip warmer side of the grip/thumb warmer adjustment switch is pressed, the grip warmer indicator comes on and the display switches to the grip warmer level.

When the thumb warmer side of the grip/thumb warmer adjustment switch is pressed, the thumb warmer indicator comes on and the display switches to the thumb warmer level.

See “Grip/thumb warmer adjustment switch” on page 18 for detailed information.



1. Grip/thumb warmer adjustment switch



1. Grip warmer indicator “♨”
2. Thumb warmer indicator “”

TIP

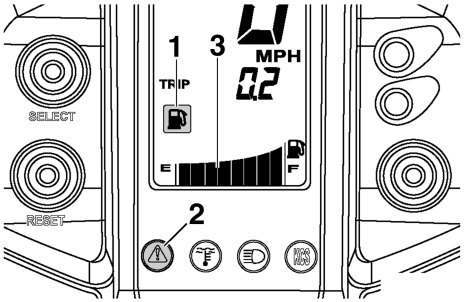
- The grip/thumb warmer level is displayed for 5 seconds after releasing the grip/thumb warmer adjustment switch, then the display switches to the fuel meter.
- When the engine is started, the grip/thumb warmer levels are set to the levels selected when the engine was last stopped.

ESU10451

Fuel level warning indicator “⛽”

The fuel level warning indicator indicates a malfunctioning sensor, disconnected coupler, broken lead, or short circuit when detected by the self-diagnosis device of the snowmobile.

The fuel level warning indicator, warning light, and all segments of the fuel meter warn the rider of the above problems by flashing continuously.
If this occurs, have a Yamaha dealer inspect the snowmobile as soon as possible.

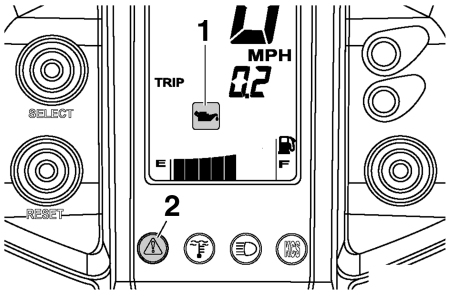


1. Fuel level warning indicator "⛽"
2. Warning light "⚠"
3. Fuel meter

ESU10460

Oil level warning indicator "🛢"

The oil level warning indicator and the warning light come on when the engine oil level is low.



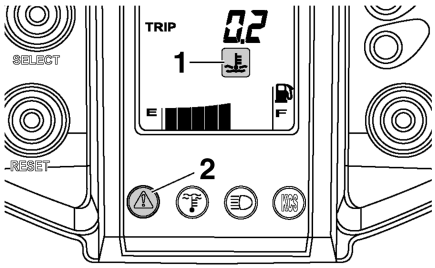
1. Oil level warning indicator "🛢"
2. Warning light "⚠"

If the oil level warning indicator and the warning light come on, place the snowmobile on a level surface and allow it to idle for one minute.
If the oil level warning indicator and the warning light go off, the engine oil level is sufficient, however it is getting low. Add engine oil as soon as possible.
If the oil level warning indicator and the warning light do not go off, check the engine oil level in the oil tank (see page 56 for engine oil level checking procedures), and add engine oil if necessary.

ESU10512

Coolant temperature warning indicator "🌡"

If the engine overheats, the coolant temperature warning indicator and the warning light come on. When this occurs, stop the engine immediately and allow the engine to cool down, and then check the coolant level in the coolant reservoir. (See page 60 for checking procedures.)



1. Coolant temperature warning indicator "🌡"
2. Warning light "⚠"

ECS00041

NOTICE

Do not continue to operate the engine if it is overheating.

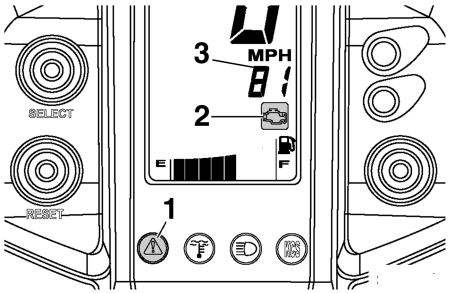
ESU12682

Self-diagnosis device

This model is equipped with a self-diagnosis device for various electrical circuits.
If a problem is detected in any of those circuits, the warning light and the self-diagnosis warning indicator will flash, and a two-digit er-

ror code will flash slowly in the tripmeter/odometer display. Note the error code, and then have a Yamaha dealer inspect the snowmobile as soon as possible. ***NOTICE:*** **Do not continue to operate the engine longer than necessary if there is an error code to avoid possible engine damage.**

[ECS00820]



1. Warning light "⚠"
2. Self-diagnosis warning indicator "🔧"
3. Two-digit error code

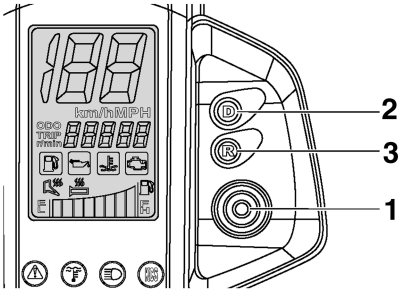
ESU10544

Drive select switch (PZ50RT / PZ50GT / PZ50MT / PZ50VT)

The drive select switch is used to shift the snowmobile into drive or reverse. After coming to a complete stop, press the drive select switch.

The drive "D" indicator light comes on when the transmission is in drive (forward).

The reverse "R" indicator light comes on when the transmission is in reverse.



1. Drive select switch (PZ50RT / PZ50GT / PZ50MT / PZ50VT)
2. Drive "D" indicator light (PZ50RT / PZ50GT / PZ50MT / PZ50VT)
3. Reverse "R" indicator light (PZ50RT / PZ50GT / PZ50MT / PZ50VT)

ECS00052

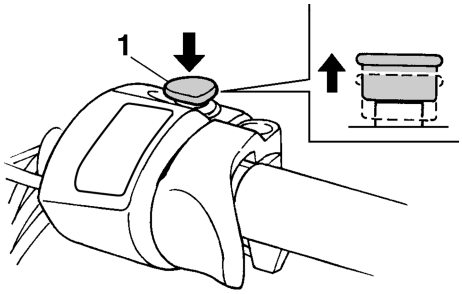
NOTICE

Do not use the drive select switch while the snowmobile is moving. Otherwise, the drive train could be damaged.

ESU10531

Engine stop switch "⊗"

The engine stop switch is used to stop the engine in an emergency. Simply push the stop switch to stop the engine. To start the engine, pull the stop switch and proceed with starting the engine. (See page 36 for engine starting procedures.)



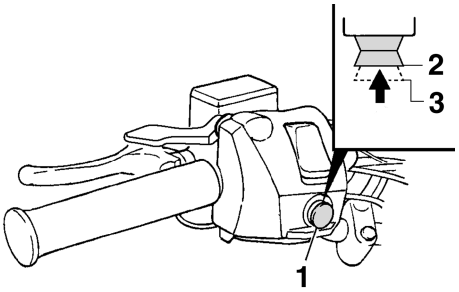
1. Engine stop switch "⊗"

During the first few rides, practice using the stop switch so that you can react quickly in an emergency.

ESU10661

Headlight beam switch "LIGHTS"

Push the headlight beam switch to change the headlight to high beam "HI" or to low beam "LO".

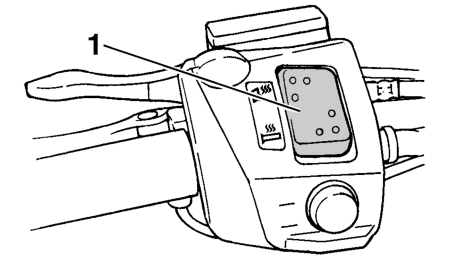


1. Headlight beam switch "LIGHTS"
2. High beam "HI"
3. Low beam "LO"

ESU10674

Grip/thumb warmer adjustment switch

The grip/thumb warmer adjustment switch controls the electrically heated handlebar grips and throttle lever.



1. Grip/thumb warmer adjustment switch

To raise the temperature

To raise the grip warmer temperature, press the "" side of the switch. To raise the thumb warmer temperature, press the "" side of the switch.

To lower the temperature

Continue to press the switch until the temperature level returns to the minimum level, and then raise the temperature to the desired level.

See "Fuel meter and grip/thumb warmer level indicator" on page 14 for detailed information.

ESU10691

Auxiliary DC jack (PZ50VT)

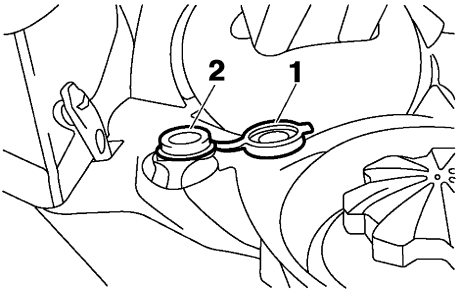
The auxiliary DC jack is located in the front panel and can be used for accessories.

TIP

The auxiliary DC jack cannot be used if the engine is not running.

To use the auxiliary DC jack

1. Start the engine.
2. Open the auxiliary DC jack cap, and then insert the accessory power plug into the jack.



1. Auxiliary DC jack cap
2. Auxiliary DC jack

3. After using the auxiliary DC jack, be sure to remove the accessory power plug from the jack and to close the auxiliary DC jack cap.

ECS00120

NOTICE

- **Do not use accessories requiring more than the maximum rated capacity for the auxiliary DC jack. This may overload the circuit and cause the fuse to blow. (See page 74 for the specified amperage.)**

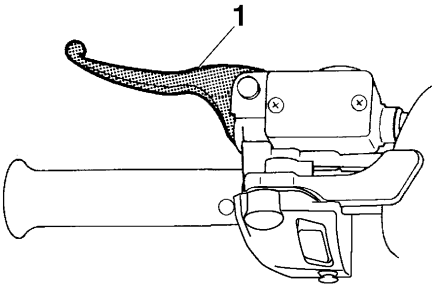
- **Do not use an automotive cigarette lighter or other accessory with a plug that gets hot because the jack can be damaged.**

Maximum rated capacity:
DC 12 V, 2.5 A (30 W)

ESU10550

Brake lever

The snowmobile is stopped by braking the entire drive system.
Squeeze the brake lever towards the handlebar grip to stop the snowmobile.



1. Brake lever

TIP

When the brake lever is operated, the brake light will illuminate.

ECS00060

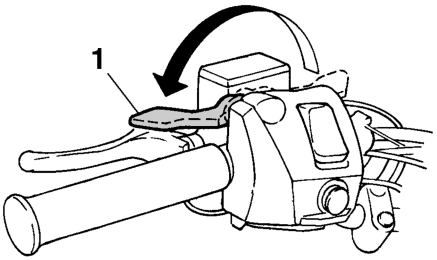
NOTICE

Make sure that the brake lever end does not project out over the handlebar end. This will help prevent brake lever damage when the snowmobile is placed on its side for service.

ESU10581

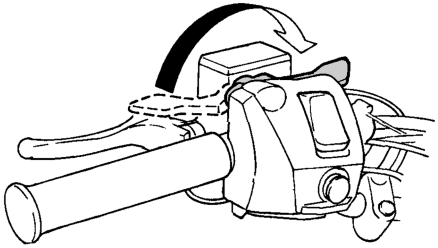
Parking brake lever

When parking the snowmobile or starting the engine, apply the parking brake by moving the parking brake lever to the left.



1. Parking brake lever

To release the parking brake, move the parking brake lever to the right.



ESU10712

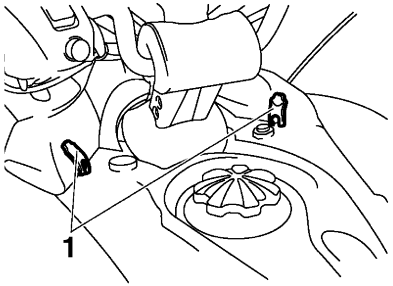
Shroud latches (PZ50VT)

EWS00082

⚠ WARNING

Be sure the shroud is secured before operation. A loose shroud could move and cause loss of control.

To open the shroud, unhook the shroud latches, and then slowly raise the shroud forward until it stops. When closing the shroud, slowly lower it to its home position, and then hook the shroud latches.



1. Shroud latch

ECS00140

NOTICE

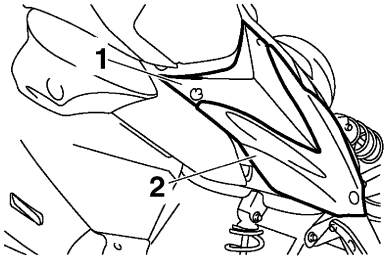
Make sure that all cables and wires are in place when closing the shroud.

ESU10731

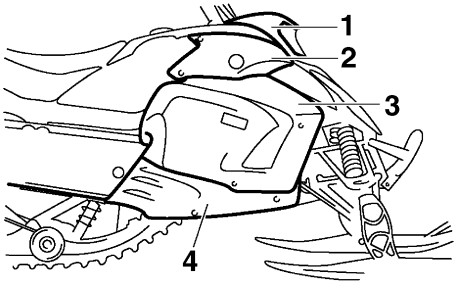
Shroud and covers

Securely fasten the shroud and covers before operating the snowmobile. (See page 49 for removal and installation procedures.)

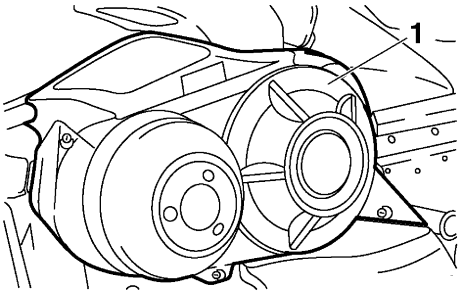
PZ50 / PZ50RT / PZ50GT / PZ50MT



1. Air filter case cover
2. Front cover

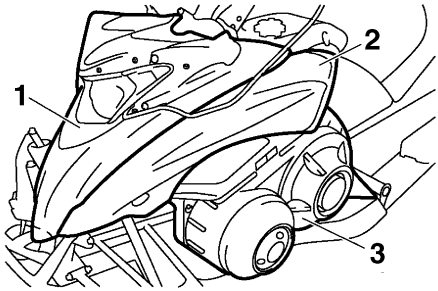


1. Top cover
2. Right upper cover
3. Right side cover
4. Right lower cover

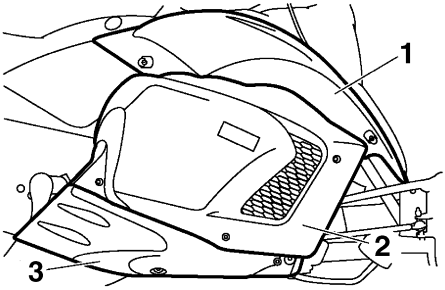


1. Left side cover

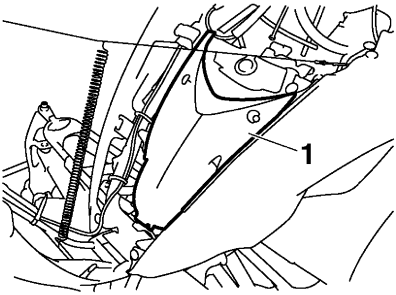
PZ50VT



1. Shroud
2. Left upper cover
3. Left side cover



1. Right upper cover
2. Right side cover
3. Right lower cover



1. Air filter case cover

ESU10751

Drive guard

EWS00401

⚠ WARNING

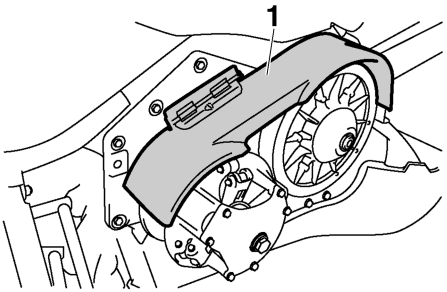
- **Coming in contact with the rotating V-belt or clutch parts can cause severe injury or death. Never run the engine with the drive guard removed.**
- **Make sure that the drive guard is tightened securely before operating the snowmobile to protect against severe injury or death from a broken V-belt or other part should it come off the snowmobile while it is in operation.**

ECS00830

NOTICE

Never run the engine with the V-belt removed. Clutch components can be damaged.

The drive guard is designed to cover the V-belt clutch and V-belt in case parts break or come loose.

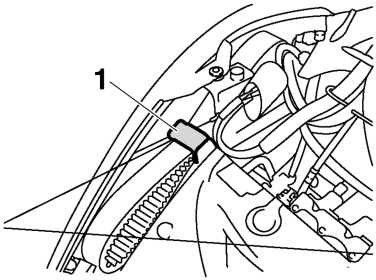


1. Drive guard

ESU10770

V-belt holder (PZ50VT)

Keep a spare V-belt for emergency use by placing it into the V-belt holder provided.



1. V-belt holder

ECS00190

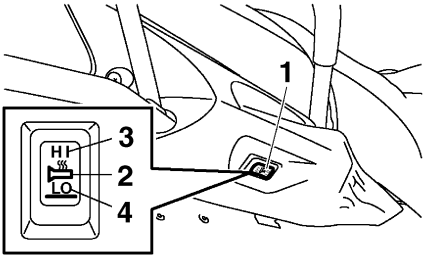
NOTICE

Make sure that the V-belt is installed securely in the holder.

ESU10680

Passenger grip warmer switch (PZ50VT)

The passenger grip warmer switch controls the electrically heated passenger grips.



1. Passenger grip warmer switch
2. Off
3. "HI" (high)
4. "LO" (low)

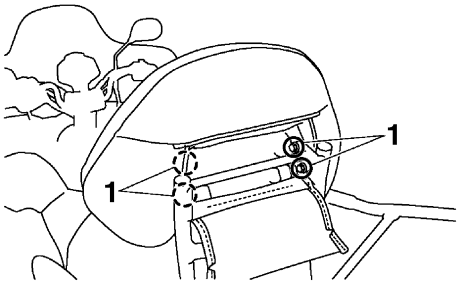
ESU10801

Backrest (PZ50VT)

The backrest is adjustable.

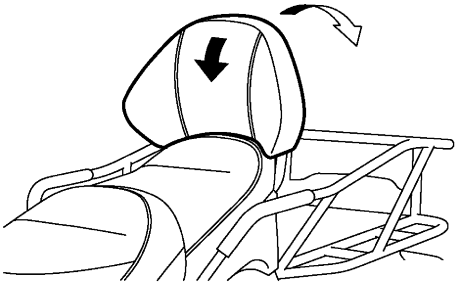
To adjust the backrest angle

1. Open the backrest zipper and loosen the backrest bolts.



1. Backrest bolt

2. Adjust the backrest angle to the desired position.



3. Tighten the bolts and close the zipper.

Backrest bolt tightening torque:
23 Nm (2.3 m·kgf, 17 ft·lbf)

EWS00131

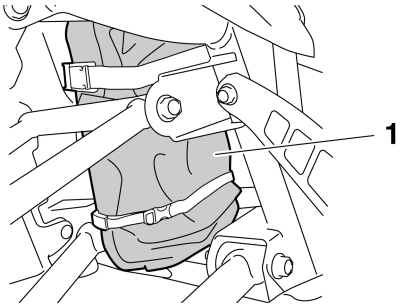
⚠ WARNING

Do not sit on the backrest. Otherwise, you could lose your balance, fall, and be injured.

ESU12991

Storage pouch

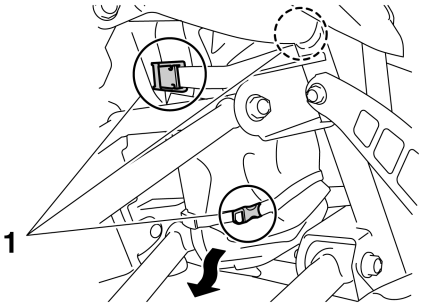
The storage pouch is located behind the front bumper. Use the storage pouch to store the tool kit, spare parts, such as the V-belt (PZ50 / PZ50RT / PZ50GT / PZ50MT), or other small items.



1. Storage pouch

To remove the storage pouch

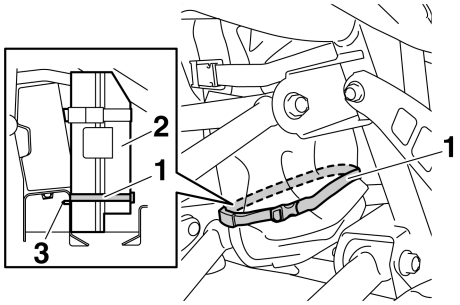
Unfasten the storage pouch upper and lower buckles, and then pull the storage pouch off as shown.



1. Storage pouch buckle

To install the storage pouch

1. Fasten the storage pouch upper buckles.
2. Pass the storage pouch lower strap between the bracket and the frame, and then fasten the buckle to secure the pouch.



1. Storage pouch lower strap
2. Storage pouch
3. Bracket fastener

TIP

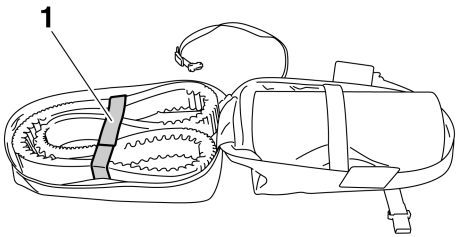
- Be sure to route the storage pouch lower strap above the bracket fasteners.
- When installing the storage pouch, make sure that the storage pouch buckles are securely fastened.

Storing the spare V-belt (PZ50 / PZ50RT / PZ50GT / PZ50MT)

Keep a spare V-belt for emergency use by storing it in the storage pouch.

TIP

When storing a spare V-belt in the storage pouch, be sure to secure it with the hook and loop fastener.

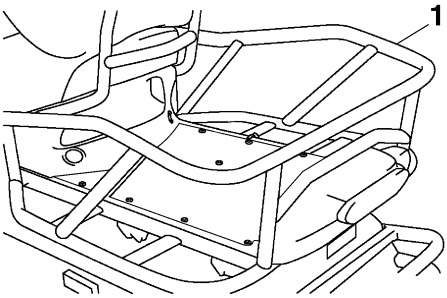


1. Hook and loop fastener

ESU10840

Rear carrier (PZ50VT)

The rear carrier is located at the rear of the snowmobile.



1. Rear carrier

Maximum load limit:
20 kg (44 lb)

EWS00140

⚠ WARNING

Do not use the rear carrier to lift the snowmobile. The snowmobile could fall, which could result in severe injury or death.

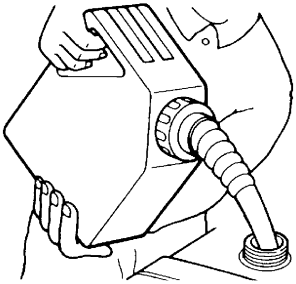
ESU10621
Fuel

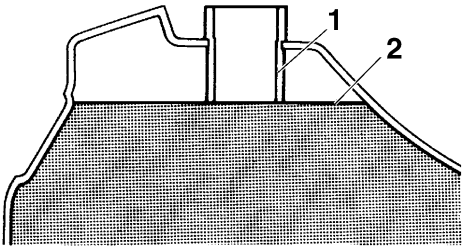
Make sure there is sufficient gasoline in the tank.

EWS00071
⚠ WARNING

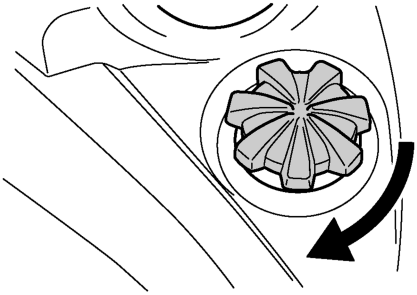
Gasoline and gasoline vapors are extremely flammable. To avoid fires and explosions and to reduce the risk of injury when refueling, follow these instructions.

1. Before refueling, turn off the engine and be sure that nobody is on the snowmobile. Never refuel while smoking, or while in the vicinity of sparks, open flames, or other sources of ignition such as the pilot lights of water heaters and clothes dryers.
2. Do not overfill the fuel tank. Stop filling when the fuel reaches the bottom of the filler tube. Because fuel expands when it heats up, heat from the engine or the sun can cause fuel to spill out of the fuel tank.





1. Filler tube
2. Fuel level



3. Wipe up any spilled fuel immediately.
4. Be sure the fuel tank cap is closed securely by turning it clockwise.

EWS00680
⚠ WARNING

Gasoline is poisonous and can cause injury or death. Handle gasoline with care. Never siphon gasoline by mouth. If you should swallow some gasoline or inhale a lot of gasoline vapor, or get some gasoline in your eyes, see your doctor immediately. If gasoline spills on your skin, wash with soap and water. If gasoline spills on your clothing, change your clothes.

Recommended fuel:
PREMIUM UNLEADED GASOLINE ONLY
Fuel tank capacity:
PZ50 26.7 L (7.05 US gal, 5.87 Imp.gal)
PZ50GT 26.7 L (7.05 US gal, 5.87 Imp.gal)
PZ50MT 26.7 L (7.05 US gal, 5.87 Imp.gal)
PZ50RT 26.7 L (7.05 US gal, 5.87 Imp.gal)
PZ50VT 32.9 L (8.69 US gal, 7.24 Imp.gal)

Your Yamaha engine has been designed to use premium unleaded gasoline with a pump octane number [(R+M)/2] of 91 or higher, or a research octane number of 95 or higher.
If the recommended fuel is not used, the engine may not perform as it should.

ECS00080

NOTICE

- **Oxygenated fuels (gasohol) containing a maximum 5% of ethanol can be used, although richer jetting may be required to prevent engine damage. Consult a Yamaha dealer. Gasohol containing methanol is not recommended.**
- **Make sure that snow or ice does not enter the fuel tank when refueling.**
- **Do not use alcohol deicers or water absorbing additives with oxygenated fuel.**
- **The fuel tank should be filled with straight gasoline as specified.**

ESU10872

Suspension

The suspension can be adjusted to suit rider preference. Softer settings, for example, may provide greater rider comfort, while harder settings may allow more precise handling and control over certain types of terrain or riding conditions.

If you are not familiar with suspension adjustments, have a Yamaha dealer make these adjustments.

EWS00151

⚠ WARNING

Read and understand the following information before handling shock absorbers that contain highly pressurized nitrogen gas.

- **Do not tamper with or attempt to open the cylinder assemblies.**
- **Do not subject the shock absorbers to an open flame or other high heat source. This may cause the unit to explode due to excessive gas pressure.**
- **Do not deform or damage the cylinders in any way. Cylinder damage will result in poor damping performance.**
- **Do not dispose of a damaged or worn out shock absorber yourself. Take the shock absorber to a Yamaha dealer for any service.**

ESU10904

Adjusting the spring preload of the front shock absorbers (PZ50 / PZ50GT / PZ50MT / PZ50VT)

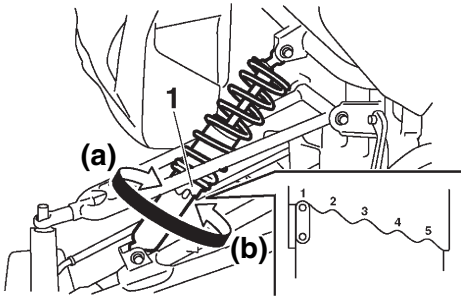
EWS00720

⚠ WARNING

The spring preload of the left and right shock absorbers must be adjusted to the same setting. Uneven settings can cause poor handling and loss of stability.

The spring preload can be adjusted by turning the adjusting rings (PZ50 / PZ50MT / PZ50VT) or adjusting nuts (PZ50GT). Adjust the spring preload as follows.

PZ50 / PZ50MT / PZ50VT

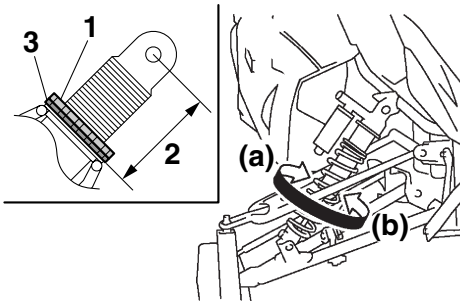


1. Spring preload adjusting ring

To increase the spring preload and thereby harden the suspension, turn the adjusting ring in direction (a). To decrease the spring preload and thereby soften the suspension, turn the adjusting ring in direction (b).

Spring preload setting:
Minimum (soft):
1
Standard:
1
Maximum (hard):
5

PZ50GT



1. Locknut
2. Distance A
3. Spring preload adjusting nut

1. Loosen the locknut.
2. To increase the spring preload and thereby harden the suspension, turn the adjusting nut in direction (a). To decrease the spring preload and thereby soften the suspension, turn the adjusting nut in direction (b).

TIP

The spring preload setting is determined by measuring distance A, shown in the illustration. The longer distance A is, the higher the spring preload; the shorter distance A is, the lower the spring preload.

Spring preload setting*:
Minimum (soft):
168.6 mm (6.64 in)
Standard:
168.6 mm (6.64 in)
Maximum (hard):
178.6 mm (7.03 in)
* Distance A changes 1.5 mm (0.06 in) with each full turn of the adjusting nut.

3. Tighten the locknut to the specified torque. ***NOTICE:*** **Always tighten the locknut against the adjusting nut, and then tighten the locknut to the specified torque.** [ECS00860]

Tightening torque:
Locknut:
42 Nm (4.2 m·kgf, 30 ft·lbf)

ESU12553

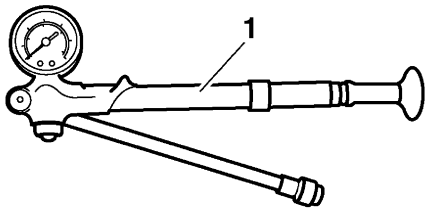
Adjusting the air pressure of the front shock absorbers (PZ50RT)

EWS00730

⚠ WARNING

The air pressure of the left and right shock absorbers must be adjusted to the same setting. Uneven settings can cause poor handling and loss of stability.

This snowmobile is equipped with FOX shock absorbers as standard equipment.
The air pressure of the shock absorbers can be adjusted using the shock absorber pump included with your snowmobile.



1. Shock absorber pump

To adjust the air pressure

EWS00621

⚠ WARNING

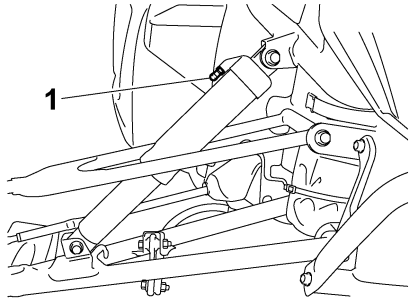
Support the snowmobile securely on a suitable stand before adjusting the shock absorbers. Otherwise, the snowmobile could fall and cause injury.

ECS00710

NOTICE

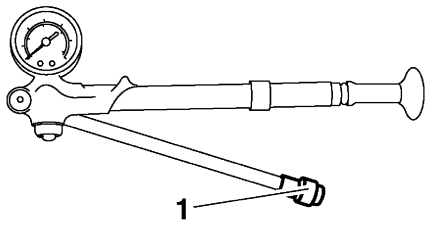
Make sure that there is no load on the shock absorbers and that they are fully extended before making any air pressure adjustments.

1. Place the snowmobile on a level surface and apply the parking brake.
2. Lift the front of the snowmobile onto a suitable stand to raise the skis off the ground.
3. Remove the air valve cap from the shock absorber.



1. Air valve cap

4. Install the hose connector of the shock absorber pump onto the air valve of the shock absorber and tighten it approximately six turns until the pressure registers on the pump gauge. ***NOTICE:*** **Do not overtighten the connector onto the air valve as this will damage the connector seal.** [ECS00721]



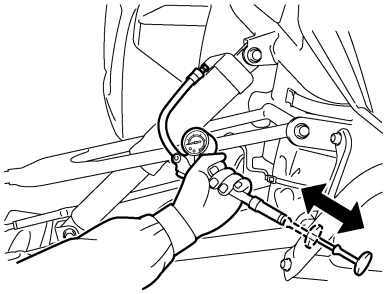
1. Hose connector

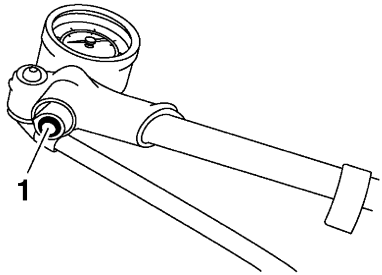
TIP

If the shock absorber has no air pressure, the gauge reading will be zero.

5. To increase the air pressure, operate the pump a few times. The pressure should increase slowly. If the pressure increases rapidly, check to make sure that the pump is properly connected and tightened onto the air valve. To decrease the

air pressure, push the black bleed valve button. ***NOTICE:*** **Do not exceed 1034 kPa (10.3 kgf/cm², 150 psi).** [ECS00732]





1. Bleed valve button

Air pressure range:
345 kPa (3.4 kgf/cm², 50 psi) to 1034 kPa (10.3 kgf/cm², 150 psi)
Recommended air pressure:
483 kPa (4.8 kgf/cm², 70 psi)

TIP

To allow pressure to escape from the pump and the shock absorber, push the button halfway down and hold it. To allow only a small amount of pressure to escape, push the button all the way down and quickly release it.

6. Remove the hose connector from the air valve.

TIP

When removing the connector, the sound of air escaping may be heard, but this is from the pump hose, not the shock absorber.

7. Install the air valve cap.

TIP

If the front shock absorber bottoms too easily or rolls too much during cornering, increase the air pressure by 34 kPa (0.3 kgf/cm², 5 psi). If the shock absorber is too firm and you want a more compliant ride, decrease the air pressure by 34 kPa (0.3 kgf/cm², 5 psi).

ESU10925

Adjusting the damping forces of the front shock absorbers (PZ50GT)

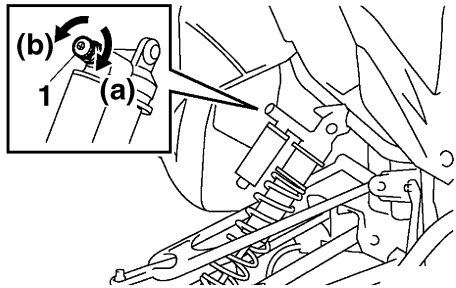
EWS00740

⚠ WARNING

The damping forces of the left and right shock absorbers must be adjusted to the same settings. Uneven settings can cause poor handling and loss of stability.

Compression damping force

The compression damping force of each shock absorber can be adjusted by turning its compression damping force adjusting knob. To increase the compression damping force, turn the adjusting knob in direction (a). To decrease the compression damping force, turn the adjusting knob in direction (b).



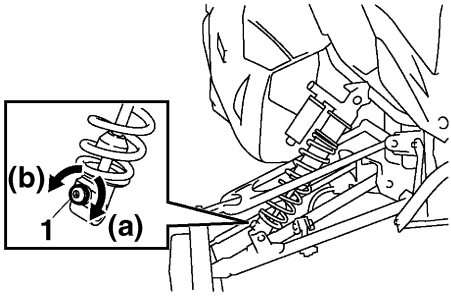
1. Compression damping force adjusting knob

Compression damping setting:
Minimum (soft):
12 click(s) in direction (b)*
Standard:
7 click(s) in direction (b)*
Maximum (hard):
2 click(s) in direction (b)*
* With the adjusting knob fully turned in direction (a)

Rebound damping force

The rebound damping force of each shock absorber can be adjusted by turning its rebound damping force adjusting knob.

To increase the rebound damping force, turn the adjusting knob in direction (a). To decrease the rebound damping force, turn the adjusting knob in direction (b).



1. Rebound damping force adjusting knob

Rebound damping setting:
Minimum (soft):
20 click(s) in direction (b)*
Standard:
12 click(s) in direction (b)*
Maximum (hard):
3 click(s) in direction (b)*
* With the adjusting knob fully turned in direction (a)

TIP

The damping forces will not decrease past the minimum levels even if the adjusting knobs are turned out more than the minimum settings.

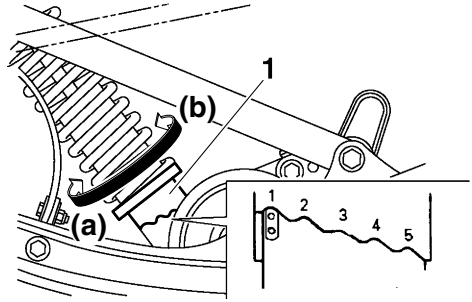
ESU10936

Adjusting the spring preload of the center shock absorber and the rear torsion springs

The spring preload can be adjusted by turning the adjusting ring (PZ50 / PZ50GT / PZ50MT / PZ50VT) or adjusting nut (PZ50RT) on the center shock absorber and the adjusters on the rear torsion springs. Adjust the spring preload as follows.

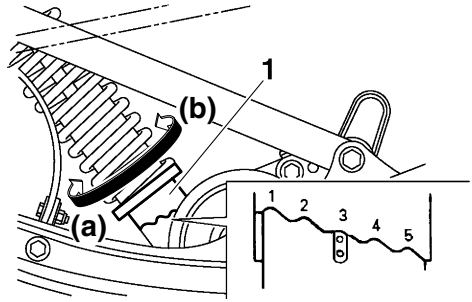
Center shock absorber (PZ50 / PZ50GT / PZ50MT / PZ50VT)

PZ50 / PZ50GT / PZ50VT



1. Spring preload adjusting ring

PZ50MT

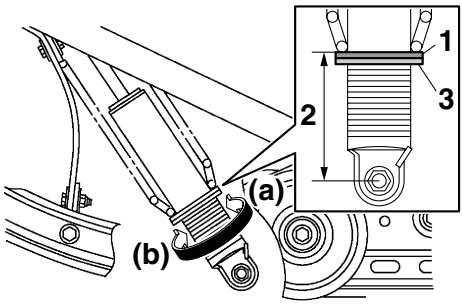


1. Spring preload adjusting ring

To increase the spring preload and thereby harden the suspension, turn the adjusting ring in direction (a). To decrease the spring preload and thereby soften the suspension, turn the adjusting ring in direction (b).

Spring preload setting:
Minimum (soft):
1
Standard:
PZ50 / PZ50GT / PZ50VT 1
PZ50MT 3
Maximum (hard):
5

Center shock absorber (PZ50RT)



1. Spring preload adjusting nut
2. Distance A
3. Locknut

1. Loosen the locknut.
2. To increase the spring preload and thereby harden the suspension, turn the adjusting nut in direction (a). To decrease the spring preload and thereby soften the suspension, turn the adjusting nut in direction (b).

TIP

The spring preload setting is determined by measuring distance A, shown in the illustration. The longer distance A is, the higher the spring preload; the shorter distance A is, the lower the spring preload.

Spring preload setting*:
Minimum (soft):
112.5 mm (4.43 in)
Standard:
113.5 mm (4.47 in)
Maximum (hard):
123.5 mm (4.86 in)
* Distance A changes 1.5 mm (0.06 in) with each full turn of the adjusting nut.

3. Tighten the locknut to the specified torque. ***NOTICE:*** **Always tighten the locknut against the adjusting nut, and then tighten the locknut to the specified torque.** [ECS00860]

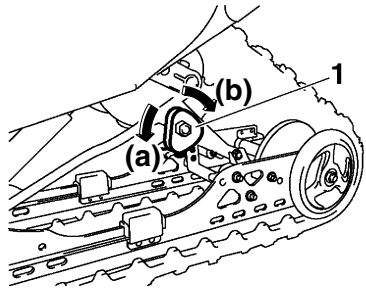
Tightening torque:
Locknut:
42 Nm (4.2 m·kgf, 30 ft·lbf)

Rear torsion springs

EWS00750

⚠ WARNING

The left and right spring preloads must be adjusted to the same setting. Uneven settings can cause poor handling and loss of stability.



1. Spring preload adjuster

To increase the spring preload and thereby harden the suspension, turn the adjuster in direction (a). To decrease the spring preload and thereby soften the suspension, turn the adjuster in direction (b).

Spring preload setting:
Minimum (soft):
S
Standard:
M
Maximum (hard):
H

ESU13092

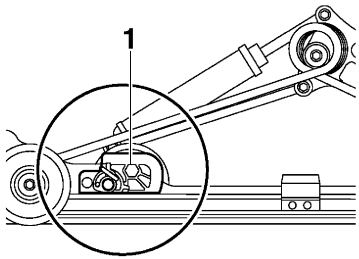
Adjusting the 2-up adjusting blocks (PZ50VT)

EWS00760

⚠ WARNING

Make sure that the 2-up adjusting blocks are installed in the same position on both sides of the snowmobile, otherwise poor handling and loss of stability may result.

The spring force can be adjusted by changing the position of the 2-up adjusting blocks.

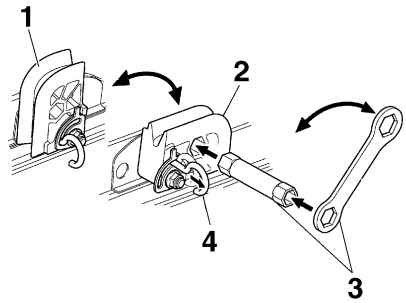


1. 2-up adjusting block

TIP

- Be sure to make this adjustment when there is no load (rider or cargo) on the snowmobile.
- Use the special tools included in the owner's tool kit to make the adjustment.

1. Insert the special tools into the 2-up adjusting block as shown.



1. 2-up position (rider and passenger)
2. Solo rider position
3. Special tool
4. Lock pin

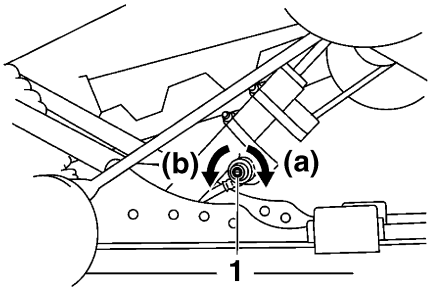
2. Pull the lock pin and turn the special tools to change the block position.
3. Release the lock pin.
4. Remove the special tools from the 2-up adjusting block.

ESU11022

Adjusting the compression damping force of the rear shock absorber (PZ50RT)

The compression damping force can be adjusted by turning the adjusting screw.

To increase the compression damping force, turn the adjusting screw in direction (a). To decrease the compression damping force, turn the adjusting screw in direction (b). ***NOTICE:*** **Do not continue to turn the adjusting screw in direction (a) after it stops. The shock absorber could be damaged and damping force adjustments will not be able to be made. Do not turn the adjusting screw in direction (b) more than 20 click(s). Even if the adjusting screw is continually turned after 20 click(s), there will be no change in the damping force. Be sure to stop the adjusting screw at a position where there is a click.** [ECS00301]



1. Compression damping force adjusting screw

Compression damping force setting:
Minimum (soft):
20 click(s) in direction (b)*
Standard:
11 click(s) in direction (b)*
Maximum (hard):
1 click(s) in direction (b)*
* With the adjusting screw fully turned in direction (a)

ESU11033

Adjusting the control rods (PZ50VT)

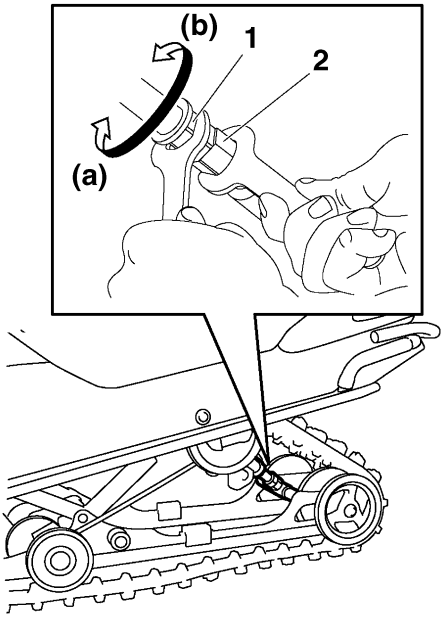
EWS00770

⚠ WARNING

The left and right adjusting nuts must be set to the same position. Uneven settings can cause poor handling and loss of stability.

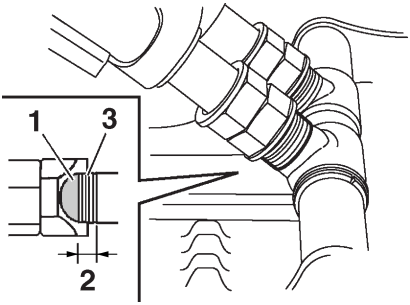
The weight transfer can be adjusted by turning the adjusting nuts on the control rods.

1. Loosen the locknut while holding the adjusting nut.



1. Locknut
2. Control rod adjusting nut

2. To increase weight transfer, turn the adjusting nut in direction (a), and to decrease weight transfer, turn it in direction (b). **WARNING! Never adjust the control rods beyond the maximum setting, indicated by red paint; otherwise, they could be damaged, which could lead to an accident or injury.** [EWS00173]



1. Red paint area
2. Adjustable range
3. Standard position

3. Tighten the locknut while holding the adjusting nut in place.

Locknut tightening torque: 25 Nm (2.5 m·kgf, 18 ft·lbf)

Pre-operation checks

ESU11071

Inspect your vehicle each time you use it to make sure the vehicle is in safe operating condition. Always follow the inspection and maintenance procedures and schedules described in the Owner's Manual.

EWS00191

⚠ WARNING

Failure to inspect or maintain the vehicle properly increases the possibility of an accident or equipment damage. Do not operate the vehicle if you find any problem. If a problem cannot be corrected by the procedures provided in this manual, have the vehicle inspected by a Yamaha dealer.

ESU11080

Pre-operation check list

ITEM	CHECKS	PAGE
Fuel	• Check fuel level. • Refuel if necessary. • Check fuel line for leakage.	24
Engine oil	• Check oil level in engine. • If necessary, add recommended oil to specified level. • Check vehicle for oil leakage.	56
Coolant	• Check coolant level. • Add if necessary.	60
V-belt	• Check for wear and damage. • Replace if necessary.	61
Drive guard	• Make sure that drive guard is tightened securely. • Check the drive guard mounts for damage.	21
Brake	• Check operation. • If soft or spongy, have Yamaha dealer bleed hydraulic system. • Check brake pads for wear. • Replace if necessary. • Check fluid level in master cylinder. • If necessary, add recommended brake fluid to specified level. • Check hydraulic system for leakage.	64
Air filter	• Check that there is no snow under the air filter element. • If necessary, brush off the snow.	55
Tool kit and recommended equipment	• Check for proper placement.	49
Shroud latches (PZ50VT)	• Make sure that the shroud latches are hooked.	19
Shroud and covers	• Make sure that the shroud and covers are securely fastened.	20

ITEM	CHECKS	PAGE
Skis and ski runners	• Check for wear and damage. • If necessary, have Yamaha dealer replace skis or ski runners.	66
Drive track	• Check for deflection, wear and damage. • If necessary, have Yamaha dealer replace track.	68
Slide runners	• Check for wear and damage. • If necessary, have Yamaha dealer replace slide runners.	68
Steering	• Check for excessive free play.	67
Strap (PZ50MT)	• Check for damage. • Replace if necessary.	41
Lights, signals and switches	• Check operation. • Correct if necessary.	18, 17, 71, 72
Throttle lever	• Make sure that operation is smooth and spring back to its home position when released.	10
Throttle override system (T.O.R.S.)	• Check the T.O.R.S. for proper operation. • If system is defective, have Yamaha dealer check vehicle.	54

ESU13210

TIP

This model is equipped with an engine oil pressure switch to stop the engine in case an engine oil pressure drop is detected. To start the engine after this system has stopped the engine, be sure to place the snowmobile on a level surface, and then turn the key in the main switch to the off position, and then to the on position. Failing to do so will prevent the engine from starting even though the engine will crank when turning the key to the start position. If the engine does not start or if it stops again, ask a Yamaha dealer to inspect the snowmobile.

ESU11302

Starting the engine

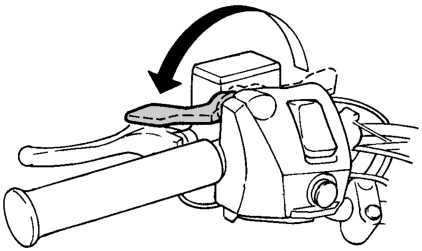
Read the Owner's Manual carefully to become familiar with all controls. If there is a control or function you do not understand, ask your Yamaha dealer.

EWS00201

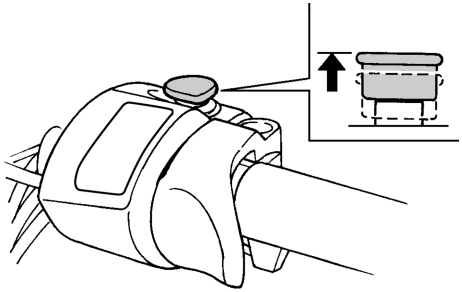
⚠ WARNING

Failure to familiarize yourself with the controls can lead to loss of control, which could cause an accident or injury.

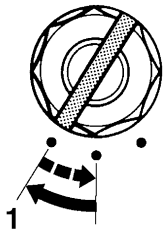
1. Apply the parking brake.



2. Be sure the engine stop switch is in the run position. The starter motor cannot be operated when the engine stop switch is in the off position.



3. Turn the main switch to the start position and release it when the engine starts. ***NOTICE:*** **Release the switch immediately after the engine starts. If the engine fails to start, release the switch, wait a few seconds, then try again. Each attempt should be as short as possible to preserve the battery. Do not crank the engine more than 10 seconds on any one attempt.** [ECS00331]



1. Start

4. Warm up the engine until it runs smoothly.
5. Be sure the low coolant temperature indicator light has gone out before operation. (See page 13 for detailed information about the indicator light.)

ESU11320
Break-in
There is never a more important period in the life of your engine than the period between 0 and 500 km (300 mi). For this reason, you should read the following material carefully.
Since the engine is brand new, do not put an excessive load on it for the first 500 km (300 mi). The various parts in the engine wear and polish themselves to the correct operating clearances. During this period, prolonged full-throttle operation or any condition that might result in engine overheating must be avoided.

Operating your snowmobile for the first time
Start the engine and let it idle for 15 minutes.

0–160 km (0–100 mi)

Avoid prolonged operation above 8000 r/min.

160–500 km (100–300 mi)

Avoid prolonged operation above 10000 r/min.

500 km (300 mi) and beyond

The snowmobile can now be operated normally.

ECS00340

NOTICE

- **After 800 km (500 mi) of operation, the engine oil must be changed and the oil filter cartridge replaced.**
- **If any engine trouble should occur during the engine break-in period, immediately have a Yamaha dealer check the snowmobile.**

ESU11333
Riding your snowmobile
Getting to know your snowmobile
EWS00211

⚠ WARNING

To avoid severe injury or death:

- **Keep both hands on the handlebar during operation.**
- **Never put your feet outside the running boards.**
- **Avoid higher speeds or more difficult maneuvers until you have become thoroughly familiar with your snowmobile and all of its controls.**

A snowmobile is a rider active vehicle, and your riding position and your balance are the two basic factors of maneuvering your snowmobile.
Riding your snowmobile requires skills acquired through practice over a period of time. Take the time to learn the basic techniques well before attempting more difficult maneuvers.
Riding your new snowmobile can be a very enjoyable activity, providing you with hours of pleasure. However, it is essential to familiarize yourself with the operation of the snowmobile to achieve the skill necessary to enjoy riding safely. Before operating the snowmobile, read this Owner's Manual completely and understand the operation of the controls. Pay particular attention to the safety information on page 5.
Please read all warning and notice labels on your snowmobile. Also, read the Snowmobiler's Safety Handbook that is supplied with your snowmobile.

Learning to ride your snowmobile
Before you ride, always perform the pre-operation checks listed on page 34. The short time spent checking the condition of the snowmobile will be rewarded with added safety and a more reliable snowmobile. Always wear the proper clothing for both warmth and to help protect you from injury if an accident occurs.
Become familiar with operating your snowmobile at low speeds, even if you are an experienced rider. Do not attempt to operate at

maximum performance until you are totally familiar with the snowmobile's handling and performance characteristics.

The beginning operator should select a large flat area to become familiar with the snowmobile. Make sure that this area is free of obstacles and other traffic. You should practice control of the throttle and brake, and master turning techniques in this area before trying more difficult terrain.

Set the parking brake and follow the instructions on page 36 to start the engine. Once the engine has warmed up, you are ready to begin riding your snowmobile.

To start out and accelerate

1. With the engine idling, release the parking brake.
2. Apply the throttle slowly and smoothly. The V-belt clutch will engage and you will start to accelerate. **WARNING! Do not allow anyone to stand behind the snowmobile when starting the engine. A broken track, track fittings, or debris thrown by the track could be dangerous to bystanders.** [EWS00690]

Braking

EWS00220

⚠ WARNING

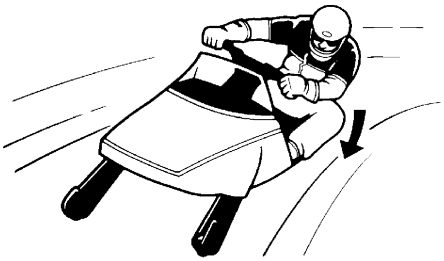
- **Many surfaces such as ice and hard-packed snow require much longer stopping distances. Be alert, plan ahead, and begin decelerating early.**
- **Improper use of the brake can cause the drive track to lose traction, reduce control, and increase the possibility of an accident.**

When slowing down or stopping, release the throttle and apply the brake gently—not suddenly.

Turning

For most snow surfaces, "body English" is the key to turning.

As you approach a curve, slow down and begin to turn the handlebar in the desired direction. As you do so, put your weight on the running board to the inside of the turn and lean your upper body into the turn.



This procedure should be practiced at low speeds many times, in a large flat area with no obstacles. Once you have learned this technique, you should be able to perform it at higher speeds or in tighter curves. Lean more as the turn gets sharper or is made at higher speeds.

Improper riding techniques such as abrupt throttle changes, excessive braking, incorrect body movements, or too much speed for the sharpness of the turn may cause the snowmobile to tip.

If your snowmobile begins to tip while turning, lean more into the turn to regain balance. If necessary, gradually let off on the throttle or steer to the outside of the turn.

Remember:

Avoid higher speeds until you are thoroughly familiar with the operation of your snowmobile.

Riding uphill

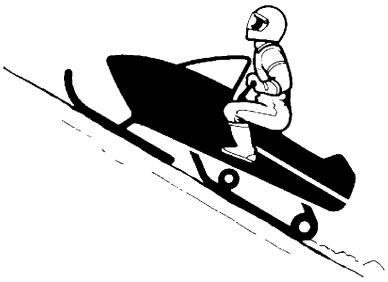
EWS00231

⚠ WARNING

Operation on slopes can lead to loss of control if proper techniques are not used. Follow these instructions to reduce your

risk of an accident. Do not try steeper or more difficult inclines until you have developed your skill on gentle slopes.

You should practice first on gentle slopes. Try more difficult climbs only after you have developed your skill. As you approach a hill, accelerate before you start the climb, and then reduce the throttle to prevent track slippage. It is also important to keep your weight on the uphill side at all times. On climbs straight up the hill, this can be accomplished by leaning forward and, on steeper inclines, standing on the running boards and leaning forward over the handlebar. (Also see “Traversing a slope”.)



Slow down as you reach the crest of the hill, and be prepared to react to obstacles, sharp drops, or other vehicles or people which may be on the other side. If you are unable to continue up a hill, do not spin the track. Stop the engine and set the parking brake. Then pull the rear of the snowmobile around to point the snowmobile back down the hill. When the snowmobile is pointed downhill, mount your snowmobile from the uphill side. Restart the engine, release the parking brake, and descend the hill.

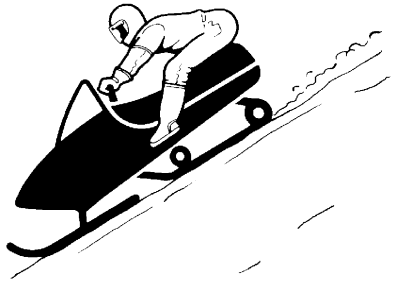
Riding downhill

EWS00240

⚠ WARNING

Use extra caution when applying the brake during a descent. Excessive braking will cause the drive track to lock, causing a loss of control.

When riding downhill, keep speed to a minimum. It is important to apply just enough throttle to keep the clutch engaged while descending the hill. This will allow you to use engine compression to help slow the snowmobile, and to keep the snowmobile from rolling freely down the hill. Also apply the brake frequently, with light pressure.



Traversing a slope

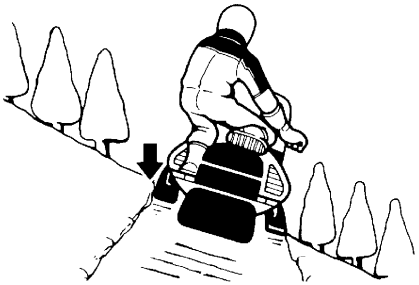
EWS00251

⚠ WARNING

Driving across the face of a slope (“sidehilling”) can lead to overturn or loss of control if proper techniques are not used. Follow these instructions to reduce your risk of an accident. Do not try steeper or more difficult inclines until you have developed your skill on gentle slopes.

Traversing a slope requires you to properly position your weight to maintain proper balance. As you travel across the slope, lean your body to position your weight towards the uphill side. A recommended riding position is to kneel with the knee of your downhill leg on

the seat and the foot of your uphill leg on the running board. This position will make it easier for you to shift your body weight as needed.



Snow and ice are slippery, so be prepared for the possibility that your snowmobile could begin to slip sideways on the slope. If this happens, steer in the direction of the slide if there are no obstacles in your path. As you regain proper balance, gradually steer again in the direction you wish to travel.

If your snowmobile starts to tip, steer down the hill to regain balance. **WARNING! If you are unable to maintain correct balance, and your snowmobile is going to tip over, dismount your snowmobile immediately on the uphill side to avoid being hit or caught under the snowmobile as it tips over.** [EWS00261]

Ice or icy surface

EWS00270

⚠ WARNING

When you have to operate on ice or icy surfaces, drive slowly and cautiously. Avoid accelerating, turning, and braking rapidly. Steering is minimal and uncontrolled spins are an ever-present danger.

Operating on ice or icy surfaces can be very dangerous. Traction for turning, stopping, and starting is much less than that on snow.

Hard-packed snow

It can be more difficult to negotiate on hard-packed snow as both the skis and drive track do not have as much traction as when the snowmobile is operated on fresh snow. Avoid rapid acceleration, turning, and braking.

Operation on surfaces other than snow or ice

Operation of your snowmobile on surfaces other than snow or ice should be avoided. Operation under such conditions will damage or result in rapid wear of the ski runners, drive track, slide runners, and drive sprockets. Operation of the snowmobile on the following surfaces should be avoided at all times:

- Dirt
- Sand
- Rocks
- Grass
- Bare pavement

Other surfaces that should be avoided for the sake of drive track and slide runner life are:

- Glare ice surfaces
- Snow mixed with a lot of dirt and sand

All of the above surfaces have one thing in common in regard to drive track and slide runners: little or no lubricating ability. Drive track and all slide rail systems require lubrication (snow or water) between the slide runners and the slide metal. In the absence of lubrication, the slide runners will rapidly wear and in severe cases, literally melt away, and the drive track will be subject to damage or failure. Also traction aids such as studs, cleats, etc., may cause further track damage or failure.

EWS00280

⚠ WARNING

Drive track damage or failure could result in loss of braking ability and snowmobile control, which could cause an accident.

- **Always check the drive track for damage or maladjustment before operating the snowmobile.**
- **Do not operate the snowmobile if you find damage to the drive track.**

ECS00350

NOTICE

Ride on fresh snow frequently. Operating on ice or hard-packed snow will rapidly wear the slide runners.

ESU11350

Maximizing drive track life

Recommendations

Track tension

During initial break-in, the new drive track will tend to stretch quickly as the track settles. Be sure to correct the track tension and alignment frequently. (See page 68 for adjustment procedures.) A loose track can slip (ratchet), derail or catch on suspension parts causing severe damage. Do not overtighten the drive track, otherwise it may increase the friction between the track and the slide runners, resulting in the rapid wear of both components. Also, this may put an excessive load on the suspension components, resulting in component failure.

Marginal snow

The drive track and the slide runners are lubricated and cooled by snow and water. To prevent the drive track and slide runners from overheating, avoid sustained high-speed usage in areas such as icy trails, frozen lakes and rivers that have minimal snow coverage. An overheated track will be weakened internally, which may cause failure or damage.

Off-trail riding

Avoid off-trail riding until there is sufficient snow coverage. It generally takes several feet of snow to provide a good overall base to properly cover debris, such as rocks, logs, etc. If snow coverage is not sufficient, stay on trails to avoid impact damage to the drive track.

Studded track

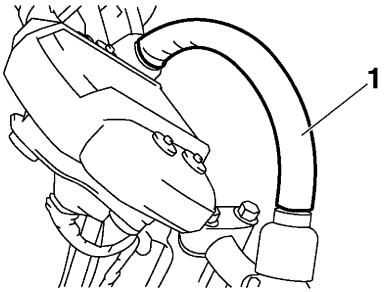
In general, track life will be shortened when studs are installed. Drilling stud holes into the drive track will cut the internal fibers, which weakens the track. Avoid spinning the drive track. Studs may catch on an object and pull out of the track, leaving tears and damage around the already weakened area. To minimize possible damage, consult your stud manufacturer for installation and stud pattern recommendations.

Yamaha does not recommend track studding.

ESU11360

Strap (PZ50MT)

The strap should be used only by experienced operators to assist them when traverse (side-hill) riding.



1. Strap

EWS00290

⚠ WARNING

Improper use of the strap on the handlebar can result in severe injury or death.

- **Use the strap only as an operator grip point when needed to shift weight uphill to maintain balance during traverse (side-hill) riding. Only experienced operators should traverse slopes steep enough to require strap use.**

- **Keep the right hand on the right handlebar grip for steering, and grip the strap with the left hand to shift weight uphill for balance during traverse riding.**
- **Ride cautiously while using the strap. Do not accelerate or decelerate abruptly while holding onto the strap.**
- **Do not use the strap to lift the snowmobile.**
- **Do not use the strap as a mounting point for cargo or accessories.**

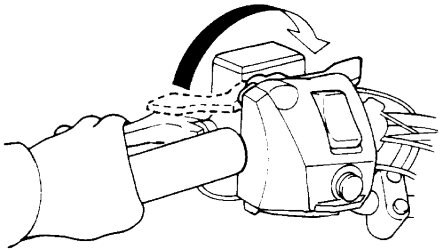
ESU11404
Driving
EWS00300

⚠ WARNING

Be sure to read the "SAFETY INFORMATION" section on page 5 and the "Riding your snowmobile" section on page 37 carefully before operating the snowmobile.

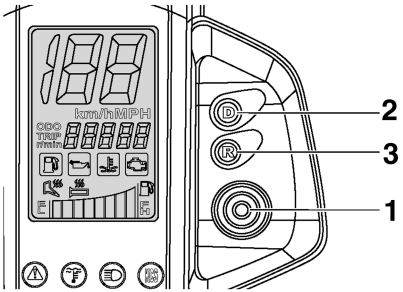
TIP
Make sure that the engine is warmed up enough before riding.

PZ50
1. Release the parking brake by moving the parking brake lever to the right.



2. Press the throttle lever slowly to move the snowmobile.
3. Turn the handlebar in the desired direction.
4. Squeeze the brake lever to stop the snowmobile.
5. Apply the parking brake by moving the parking brake lever to the left.

PZ50RT / PZ50GT / PZ50MT / PZ50VT
1. While the engine is idling, select the desired operating position by pressing the drive select switch. Make sure that the drive "D" indicator light or the reverse "R" indicator light flashes, and then remains on. Once the indicator light for the selected position remains on, the snowmobile can be driven. ***NOTICE:*** **Do not shift from drive to reverse or from reverse to drive while the snowmobile is moving, as the drive train could be damaged.** [ECS00851]



1. Drive select switch (PZ50RT / PZ50GT / PZ50MT / PZ50VT)
2. Drive "D" indicator light (PZ50RT / PZ50GT / PZ50MT / PZ50VT)
3. Reverse "R" indicator light (PZ50RT / PZ50GT / PZ50MT / PZ50VT)

TIP
If the indicator light keeps flashing, the snowmobile is not correctly shifted into drive or reverse. If this occurs, applying a little throttle while applying the brake will help the transmission to engage.

EWS00321

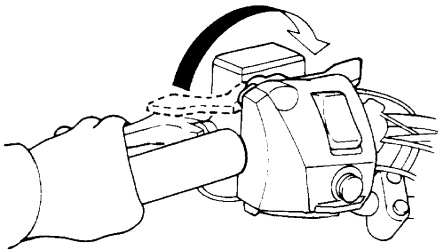
⚠ WARNING

- **Make sure that the throttle lever is fully released and the snowmobile is at a full stop before shifting.**
- **Be sure to press the drive select switch only while the engine is idling.**
- **Make sure that the reverse "R" indicator light comes on and remains on, and that the area behind the snowmobile is clear before reversing. Watch behind.**
- **Reduce speed and avoid sharp turning when operating the snowmobile in reverse.**

TIP

The reverse buzzer beeps while the transmission is in reverse.

2. Release the parking brake by moving the parking brake lever to the right.

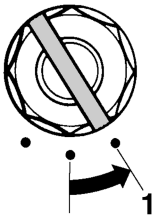


3. Press the throttle lever slowly to move the snowmobile.
4. Turn the handlebar in the desired direction.
5. Squeeze the brake lever to stop the snowmobile.
6. Apply the parking brake by moving the parking brake lever to the left.

ESU11411

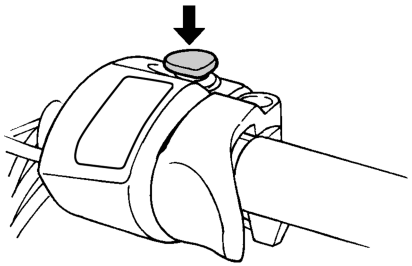
Stopping the engine

- Turn the main switch to the off position to stop the engine.



1. Off

- Push down the engine stop switch to stop the engine in an emergency.



ESU11430

Transporting

When transporting your snowmobile on a trailer or in a truck, observe the following recommendations to help protect it from damage:

- If transporting the snowmobile in an open trailer or truck, put a tight fitting cover on the snowmobile. A cover specifically designed for your snowmobile is best. This will help keep foreign objects out of the cooling vents, and also help protect the snowmobile against damage from debris on the road.
- If transporting the snowmobile in an open trailer or truck in areas where road salt is used, coat metal suspension surfaces lightly with oil or another protectant. This will

help protect against corrosion. Be sure to clean the snowmobile when you get to your destination to remove any corrosive salts.

ESU11451

Periodic inspection, adjustment, and lubrication will keep your snowmobile in the safest and most efficient condition possible. Safety is an obligation of the vehicle owner/operator. The most important points of vehicle inspection, adjustment, and lubrication are explained on the following pages.

EWS00341

⚠ WARNING

Failure to properly maintain the snowmobile or performing maintenance activities incorrectly may increase your risk of injury or death during service or while using the snowmobile. If you are not familiar with snowmobile service, have a Yamaha dealer perform service.

EWS00700

⚠ WARNING

Turn off the engine when performing maintenance unless otherwise specified.

- **A running engine has moving parts that can catch on body parts or clothing, and electrical parts that can cause shocks or fires.**
- **Running the engine while servicing can lead to eye injury, burns, fire, or carbon monoxide poisoning–possibly leading to death. See page 5 for more information about carbon monoxide.**

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any repair establishment or individual that is certified (if applicable).

Proper periodic maintenance of your snowmobile is important in order to enjoy long, pleasurable use. Especially important are the maintenance services related to emission control. These controls not only function to ensure cleaner air, but are also vital to proper engine operation and maximum performance. In the following periodic maintenance charts, the services related to emission control are grouped separately. These services require specialized data, knowledge, and equipment. Yamaha dealers are trained and equipped to perform these particular services.

ESU11461

Periodic maintenance chart for the emission control system

Items marked with an asterisk should be performed by a Yamaha dealer as they require special tools, data and technical skills.

	ITEM	REMARKS	INITIAL	EVERY	PAGE
			1 month or 800 km (500 mi) (40 hr)	Seasonally or 4000 km (2500 mi) (200 hr)	
	Spark plugs	• Check condition. • Adjust gap and clean. • Replace if necessary.		●	52
*	**Valve clearance**	• Check and adjust valve clearance when engine is cold.	Every 40000 km (25000 mi)		56

	ITEM	REMARKS	INITIAL	EVERY	PAGE
			1 month or 800 km (500 mi) (40 hr)	Seasonally or 4000 km (2500 mi) (200 hr)	
*	**Crankcase breather system**	• Check breather hose for cracks or damage. • Replace if necessary.		●	—
*	**Fuel line**	• Check fuel hose for cracks or damage. • Replace if necessary.		●	—
*	**Idle speed**	• Check and adjust idle speed.	●	●	53
*	**Fuel injection**	• Adjust synchronization.	●	●	—
*	**Exhaust system**	• Check for leakage. • Tighten or replace gasket if necessary.		●	—

ESU11561

General maintenance and lubrication chart

	ITEM	REMARKS	INITIAL	EVERY	PAGE
			1 month or 800 km (500 mi) (40 hr)	Seasonally or 4000 km (2500 mi) (200 hr)	
	Engine oil	• Change (warm engine before draining)	●	●	56
*	**Engine oil filter cartridge**	• Replace.	●	Every 20000 km (12000 mi)	56
*	**Cooling system**	• Check coolant level. • Air bleed the cooling system if necessary.		●	60
*	**Primary and secondary clutches**	• Check engagement and shift speed. • Adjust if necessary.		●	—
			Whenever operating elevation is changed.		—
		• Inspect sheaves for wear and damage. • Inspect weights/rollers and bushings for wear for primary. • Inspect ramp shoes/bushings for wear for secondary. • Replace if necessary.		●	—
		• Lubricate with specified grease.		●	—
*	**Drive chain**	• Check chain slack. • Adjust if necessary.	Initial at 500 km (300 mi) and every 800 km (500 mi) thereafter.		63
*	**Drive chain oil**	• Check oil level.	●	●	63
		• Change.		●	63
*	**Brake and parking brake**	• Adjust free play and/or replace pads if necessary.		●	64
		• Change brake fluid.	See TIP following this chart.		64
	Control cables	• Make sure that operation is smooth. • Lubricate if necessary.		●	71
*	**Disc brake installation**	• Check for slight free play. • Lubricate shaft with specified grease as required.	Every 1600 km (1000 mi)		—
*	**Slide runners**	• Check for wear and damage. • Replace if necessary.		●	68
*	**Skis and ski runners**	• Check for wear and damage. • Replace if necessary.		●	66

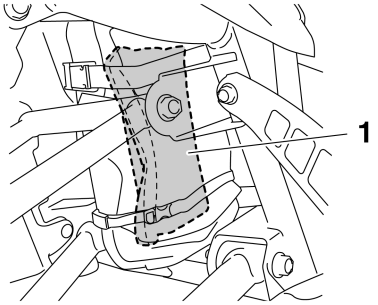
	ITEM	REMARKS	INITIAL	EVERY	PAGE
			1 month or 800 km (500 mi) (40 hr)	Seasonally or 4000 km (2500 mi) (200 hr)	
*	**Steering system**	• Check toe-out. • Adjust if necessary.		●	67
*	**Steering bearings**	• Check bearing assemblies for looseness. • Lubricate with specified grease.		●	—
*	**Skis and front shock absorbers**	• Lubricate with specified grease.		●	71
*	**Suspension component**	• Lubricate with specified grease.		●	71
	Fittings and fasteners	• Make sure that all nuts, bolts and screws are properly tightened. • Tighten if necessary.	●	●	73
*	**Battery**	• Check condition. • Charge if necessary.		●	73

TIP

Brake system:

- After disassembling the master cylinder or caliper cylinder, always change the brake fluid. Regularly check the brake fluid level and add fluid if necessary.
- Replace the oil seals of the master cylinder and caliper cylinder every two years.
- Replace the brake hose every four years, or if cracked or damaged.

ESU13001
Tool kit
The service information included in this manual and the tools provided in the owner's tool kit are intended to assist you in the performance of preventive maintenance and minor repairs. However, additional tools such as a torque wrench may be necessary to perform certain maintenance work correctly.



1. Tool kit

ECS00780
NOTICE

Before starting the engine, make sure that the tool kit is securely fastened (PZ50 / PZ50RT / PZ50GT / PZ50MT) and that the storage pouch zipper is completely closed.

TIP

If you do not have a torque wrench available during a service operation requiring one, take your snowmobile to a Yamaha dealer to check the torque settings and adjust them if necessary.

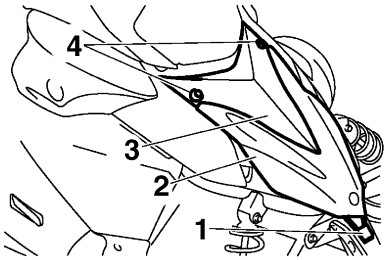
ESU11763
Removing and installing the shroud and covers
EWS00091
⚠ WARNING

Be sure shroud and covers are secured before operation. A loose shroud or cover could move and cause loss of control.

Shroud, front cover, and air filter case cover
To open the shroud and remove the front cover and air filter case cover

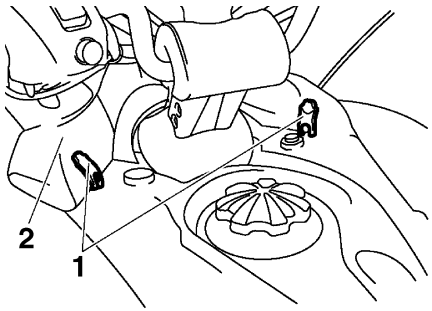
1. Unhook the latch, and then slide the front cover upward (PZ50 / PZ50RT / PZ50GT / PZ50MT).
   Unhook the shroud latches, and then slowly raise the shroud forward until it stops (PZ50VT).
2. Loosen the fasteners, lift up the air filter case cover slightly, and then unhook the cover from the air filter case to remove it.

PZ50 / PZ50RT / PZ50GT / PZ50MT

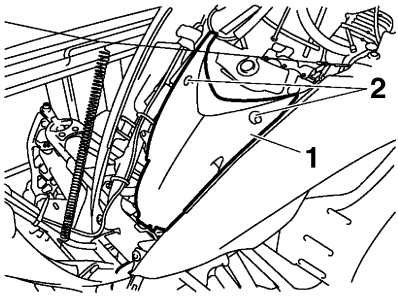


1. Latch
2. Front cover
3. Air filter case cover
4. Fastener

PZ50VT



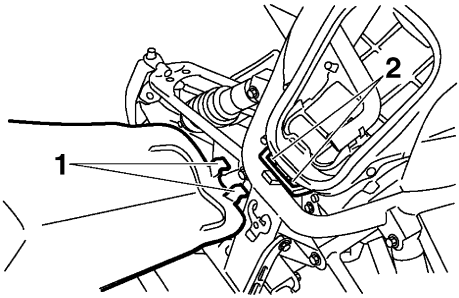
1. Shroud latch
2. Shroud



1. Air filter case cover
2. Fastener

To close the shroud and install the front cover and air filter case cover

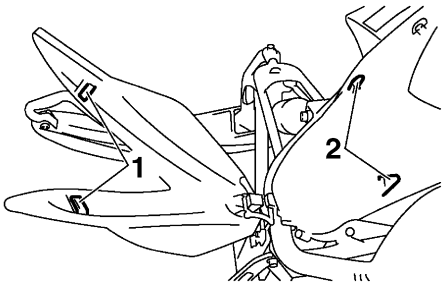
1. Insert the projections on the end of the air filter case cover into the slots in the air filter case, place it in the original position, and then tighten the fasteners.



1. Projection on the end of the air filter case cover
2. Slot in the air filter case

2. Fit the holders on the front cover over the projections on the air filter case cover, slide the front cover downward, and then hook the latch onto the holder on the front of the snowmobile (PZ50 / PZ50RT / PZ50GT / PZ50MT).

PZ50 / PZ50RT / PZ50GT / PZ50MT



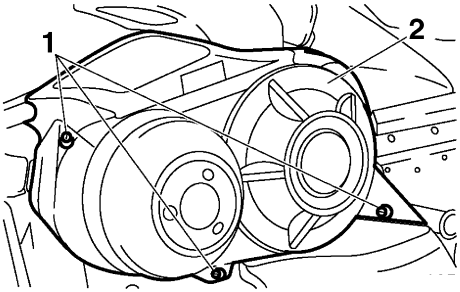
1. Holder on the front cover
2. Projection on the air filter case cover

Slowly lower the shroud to the original position, and then hook the shroud latches (PZ50VT).

Left side cover

To remove the left side cover

Loosen the fasteners, and then remove the left side cover.



1. Fastener
2. Left side cover

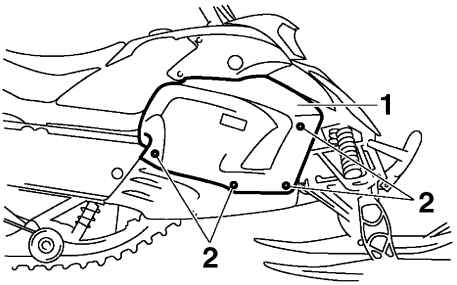
To install the left side cover

Place the left side cover in the original position, and then tighten the fasteners.

Right side cover

To remove the right side cover

Loosen the quick fastener screws, and then remove the right side cover.



1. Right side cover
2. Quick fastener screw

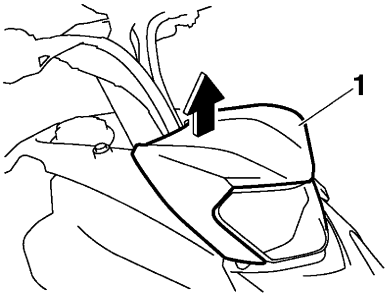
To install the right side cover

Place the right side cover in the original position, and then tighten the quick fastener screws.

Top cover (PZ50 / PZ50RT / PZ50GT / PZ50MT)

To remove the top cover

Pull up on the rear of the top cover.



1. Top cover

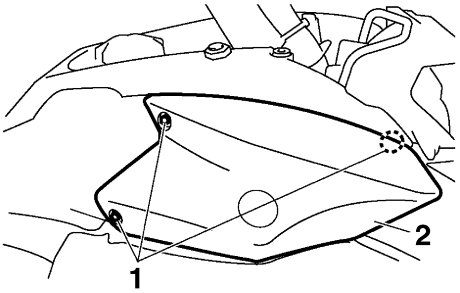
To install the top cover

Insert the projections on the front of the top cover into the slots in the left and right upper covers, and then fit the projections on the rear of the top cover into the grommets.

Right upper cover (PZ50 / PZ50RT / PZ50GT / PZ50MT)

To remove the right upper cover

1. Remove the top cover. (See the above procedure.)
2. Remove the right upper cover by removing the bolts.



1. Right upper cover bolt
2. Right upper cover

To install the right upper cover

1. Place the right upper cover in the original position, and then install and tighten the bolts to the specified torque.

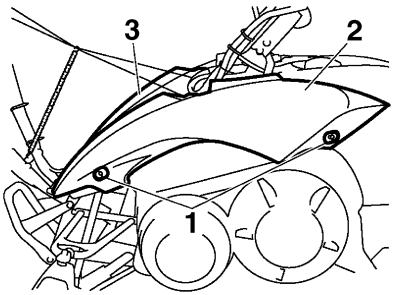
Right upper cover bolt tightening torque: 8 Nm (0.8 m·kgf, 5.8 ft·lbf)

2. Install the top cover.

Left and right upper covers (PZ50VT)

To remove an upper cover

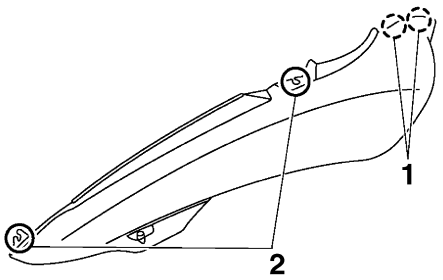
1. Open the shroud. (See the above procedure.)
2. Loosen the fasteners, and then remove the upper cover.



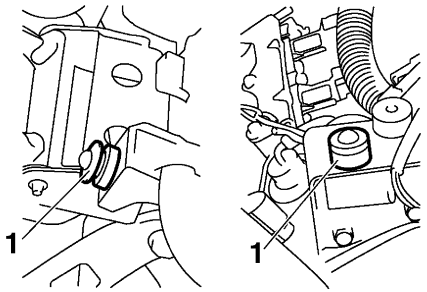
1. Fastener
2. Left upper cover
3. Right upper cover

To install an upper cover

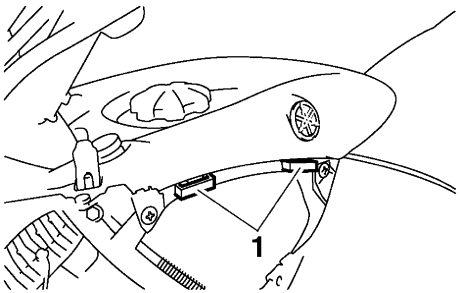
1. Insert the projections on the upper cover into the slots, fit the holders on the cover onto the grommets, and then tighten the fasteners.



1. Projection
2. Holder



1. Grommet



1. Slot

2. Close the shroud.

ECS00371

NOTICE

- **Make sure that all cables, leads, etc., are routed properly before installing the shroud and covers.**
- **When installing the shroud and covers, be sure to tighten the fasteners securely.**

ESU11782

Checking the spark plugs

The spark plug is an important engine component and is easy to inspect. The condition of the spark plug can indicate the condition of the engine.

Check the coloration on the white porcelain insulator around the center electrode. The ideal coloration at this point is a medium to a light tan color for a snowmobile that is being ridden normally. If a spark plug shows a distinctly different color, there could be something wrong with the engine. For example, a very white center electrode porcelain color could indicate an intake track air leak or carburetion problem for that cylinder. Do not attempt to diagnose such problems yourself. Instead, take the snowmobile to a Yamaha dealer for inspection and possible repairs.

You should periodically remove and inspect the spark plug because heat and deposits will cause a spark plug to slowly break down and erode. Consult a Yamaha dealer before changing to a different type of spark plug.

Specified spark plug:
Manufacturer:
NGK
Model:
CR9EKB

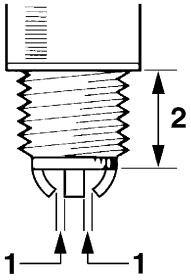
EWS00710

⚠ WARNING

Be sure to use the specified spark plug and spark plug cap. Otherwise, the T.O.R.S. may not work properly.

Spark plugs are produced in several different thread lengths. The thread length or reach is the distance from the spark plug gasket seat to the end of the threaded portion. If the reach is too long, overheating and engine damage may result. If the reach is too short, spark plug fouling and poor performance may result. Also, if the reach is too short, carbon will form on the exposed threads resulting in combustion chamber hot spots and thread damage. Always use a spark plug with the specified reach.

Spark plug reach:
19.0 mm (0.75 in)



1. Spark plug gap
2. Spark plug reach

Before installing any spark plug, measure the electrode gap with a wire thickness gauge and adjust to specification.

Spark plug gap:
0.6–0.7 mm (0.024–0.028 in)

When installing the spark plug, always clean the gasket surface. Wipe off any grime from the threads and tighten the spark plug to the specified torque.

Spark plug tightening torque:
12.5 Nm (1.25 m·kgf, 9 ft·lbf)

ECS00382

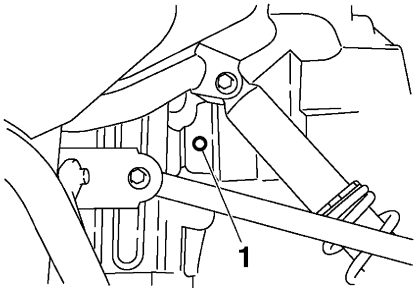
NOTICE

Make sure that the spark plug caps are securely installed. Otherwise the spark plug caps could be damaged due to engine vibration.

ESU11811

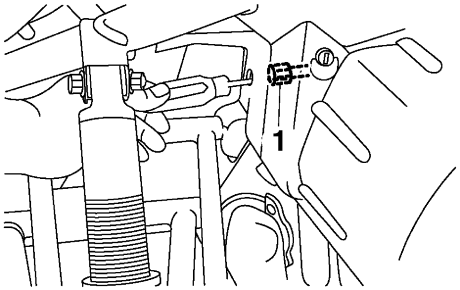
Adjusting the engine idling speed

1. Start the engine and warm it up.
2. Select the engine speed meter mode. (See page 11 for details.)
3. Remove the rubber cap.



1. Rubber cap

4. Insert a Phillips screwdriver into the hole, and then turn the idle adjusting screw in or out to adjust the engine idling speed.



1. Idle adjusting screw

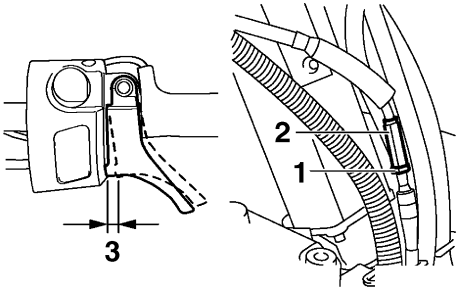
Standard engine idling speed:
1700–1900 r/min

5. Install the rubber cap.

ESU11840

Adjusting the throttle cable free play (PZ50 / PZ50RT / PZ50GT / PZ50MT)

1. Loosen the locknut.
2. Turn the adjusting bolt in or out until the proper throttle cable free play is achieved.



1. Locknut
2. Throttle cable free play adjusting bolt
3. Throttle cable free play

Throttle cable free play:
2.0–3.0 mm (0.08–0.12 in)

3. Tighten the locknut.

ESU11850

Checking the throttle cable free play (PZ50VT)

Check the throttle cable free play.

Throttle cable free play:
2.0–3.0 mm (0.08–0.12 in)

Have a Yamaha dealer adjust the free play if necessary.

ESU11862

Checking the throttle override system (T.O.R.S.)

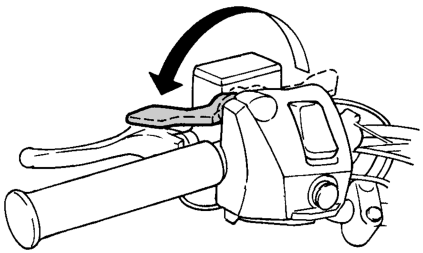
Check the T.O.R.S. for proper operation.

EWS00352

⚠ WARNING

When checking the T.O.R.S., take precautions to avoid snowmobile movement which could cause an accident:

- **Make sure that the throttle lever moves smoothly with the engine off before checking the T.O.R.S.**
- **Make sure that the parking brake is applied.**
- **Do not rev the engine to the point that the clutch engages.**

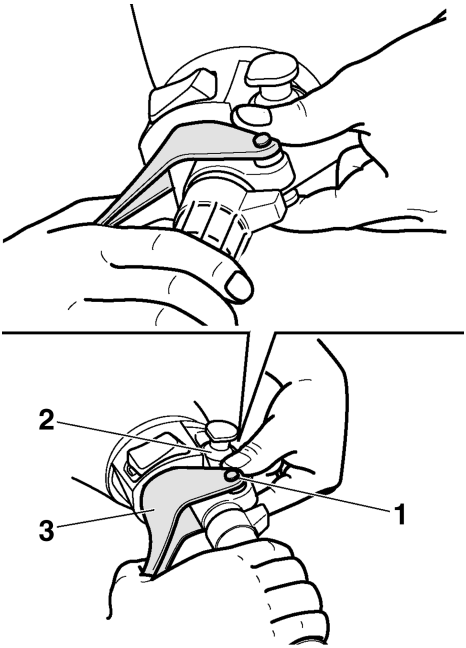


1. Start the engine.

TIP

Refer to the “Starting the engine” section on page 36.

2. Hold the pivot point of the throttle lever away from the throttle switch by putting your thumb (above) and forefinger (below) between the throttle lever pivot and the engine stop switch housing.
   While holding the pivot point as described above, press the throttle lever gradually.



1. Throttle lever pivot
2. Engine stop switch housing
3. Throttle lever

   The T.O.R.S. will be activated and the engine speed will be limited to less than the clutch engagement speed. (See page 81 for the clutch engagement speed.) **WARNING! If the engine speed does not decrease to less than the clutch engagement speed, stop the engine by turning the main switch to the off position and consult a Yamaha dealer.**

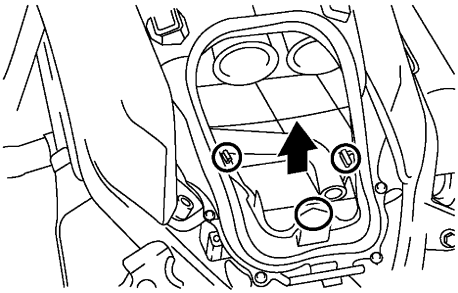
   Operating the snowmobile with a malfunctioning T.O.R.S. could result in loss of control. [EWS00362]

ESU11892

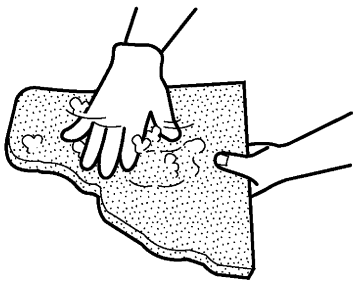
Checking the air filter

Check that there is no snow under the air filter element frame after each ride. In addition, snow may need to be cleaned during a ride depending on the riding conditions.

1. Remove the front cover (PZ50 / PZ50RT / PZ50GT / PZ50MT) or open the shroud (PZ50VT), and then remove the air filter case cover. (See page 49 for removal procedures.)
2. Unhook the air filter element frame fasteners.



3. Lift up the air filter element frame and check the air filter element. If there is any snow on the air filter element, remove the element and brush off the snow, and then install the air filter element.



4. Place the air filter element frame in the original position, and then hook the fasteners onto the frame.
5. Install the air filter case cover, and then install the front cover (PZ50 / PZ50RT / PZ50GT / PZ50MT) or close the shroud (PZ50VT).

ESU11931

High-altitude settings

Operating at high altitude reduces the performance of a gasoline engine about 3% for every 305 m (1000 ft) of elevation. This is because there is less air as altitude increases. Less air means less oxygen available for combustion.

Your snowmobile utilizes an electronic fuel injection system that delivers the optimal air/fuel ratio required by the engine. Therefore, the fuel injection system does not need to be adjusted, even for operation at high altitude.

Remember:

Less air at higher altitude means there is less horsepower available, even with the optimal air/fuel ratio. Expect acceleration and top speed to be reduced at higher altitudes.

To overcome operating with less power at high altitudes, your snowmobile may also require different settings for the drive chain gears and V-belt clutch to avoid poor performance and rapid wear. If you plan to operate your snowmobile at an altitude different from the area where you bought it, be sure to consult a Yamaha dealer. The dealer can tell you if there are any changes necessary for the altitude where you plan to ride. ***NOTICE:*** **The drive chain gears and V-belt clutch should be adjusted when operating above a high altitude of 900 m (3000 ft). Consult a Yamaha dealer.** [ECS00431]

ESU11950

Valve clearance

The valve clearance changes with use, resulting in improper air-fuel mixture and/or engine noise. To prevent this from occurring, the valve clearance must be adjusted by a Yamaha dealer at the intervals specified in the periodic maintenance chart.

ESU11983

Engine oil and oil filter cartridge

The engine oil level should be checked before each use. In addition, the oil must be changed and the oil filter cartridge replaced at the intervals specified in the periodic maintenance and lubrication chart.

EWS00370

⚠ WARNING

Engine oil is extremely hot immediately after the engine is turned off. Coming into contact with or getting any engine oil on your clothes could result in burns.

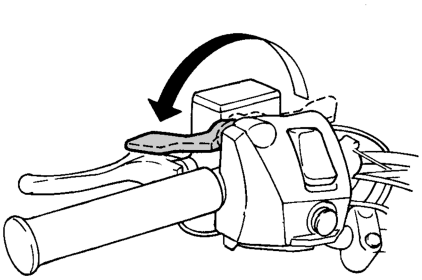
ECS00440

NOTICE

- **Do not run the engine with too much or not enough oil in the oil tank. Oil could spray out or the engine could be damaged.**
- **Be sure to change the engine oil after the first 800 km (500 mi) of operation, and every 4000 km (2500 mi) thereafter or at the start of a new season, otherwise the engine will wear quickly.**
- **The oil filter cartridge should be replaced every 20000 km (12000 mi) of operation. Have a Yamaha dealer replace the oil filter cartridge.**

To check the engine oil level

1. Place the snowmobile on a level surface and apply the parking brake.

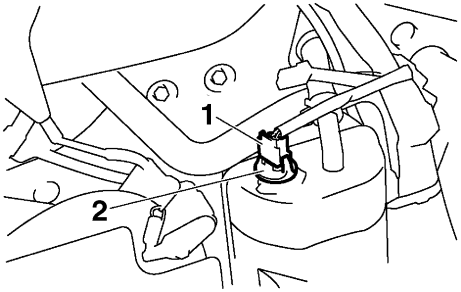


2. Start the engine, warm it up for 10–15 minutes, and then turn it off.

TIP

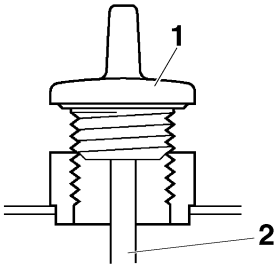
- The engine can also be warmed up by driving the snowmobile for 10–15 minutes.
- After driving the snowmobile, allow the engine to idle for at least 10 seconds before turning it off.

3. Remove the right side cover (PZ50 / PZ50RT / PZ50GT / PZ50MT), or open the shroud and remove the right upper cover and the right side cover (PZ50VT). (See page 49 for removal procedures.)
4. Disconnect the oil level gauge coupler. ***NOTICE:*** **Disconnect the oil level gauge coupler before removing the oil filler cap, otherwise the cable could twist and break.** [ECS00452]



1. Oil level gauge coupler
2. Oil filler cap

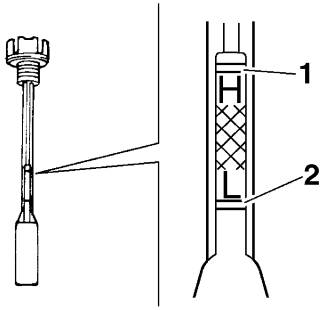
5. Remove the oil filler cap, wipe the dipstick clean, insert it back into the oil filler hole (without screwing it in), and then remove it again to check the oil level.



1. Oil filler cap
2. Dipstick

TIP

The engine oil should be between the “H” and “L” level marks on the dipstick.



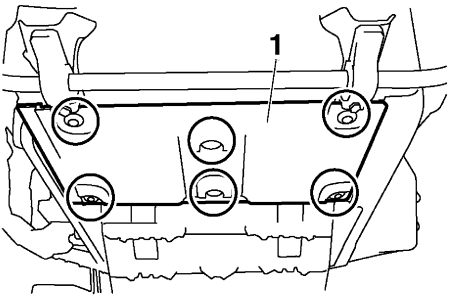
1. “H” level mark
2. “L” level mark

6. If the engine oil is below the “L” level mark, add sufficient oil of the recommended type to raise it to the “H” level mark. (See page 81 for the recommended oil.) ***NOTICE:*** **When adding the engine oil, be careful not to fill above the “H” level mark on the dipstick. Use only the recommended oil. (See page 81.) Make sure that no foreign material enters the engine oil tank.** [ECS00462]

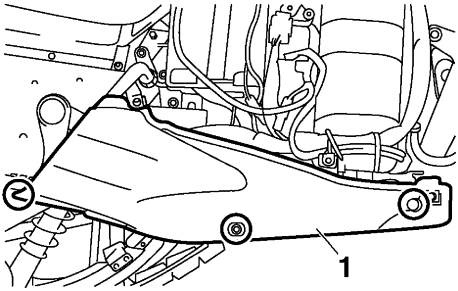
7. Insert the dipstick into the oil filler hole, and then tighten the oil filler cap.
8. Connect the oil level gauge coupler.
9. Install the right side cover (PZ50 / PZ50RT / PZ50GT / PZ50MT), or install the right side cover and the right upper cover, and then close the shroud (PZ50VT).

To change the engine oil (without oil filter cartridge replacement)

1. Place the snowmobile on a level surface, and apply the parking brake.
2. Start the engine, warm it up for several minutes, and then turn it off.
3. Remove the right side cover (PZ50 / PZ50RT / PZ50GT / PZ50MT), or open the shroud and remove the right upper cover and the right side cover (PZ50VT). (See page 49 for removal procedure.)
4. Remove the bottom panel and the right lower cover.

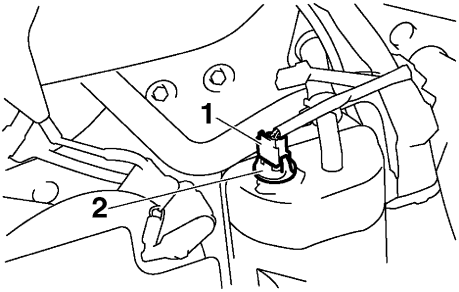


1. Bottom panel



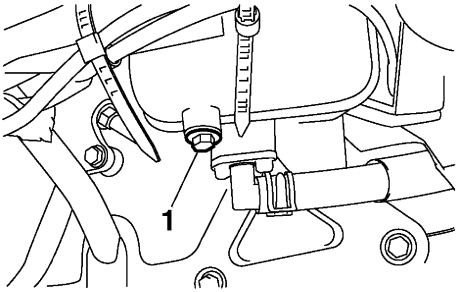
1. Right lower cover

5. Place an oil pan under the oil tank to collect the used oil.
6. Disconnect the oil level gauge coupler.



1. Oil level gauge coupler
2. Oil filler cap

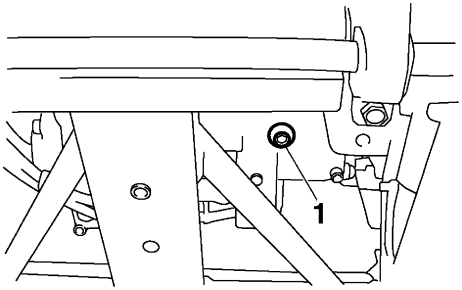
7. Remove the oil filler cap and drain bolt to drain the oil from the oil tank.



1. Engine oil drain bolt (oil tank)

8. Place an oil pan under the engine to collect the used oil.

9. Remove the engine oil drain bolt to drain the oil from the crankcase.



1. Engine oil drain bolt (crankcase)

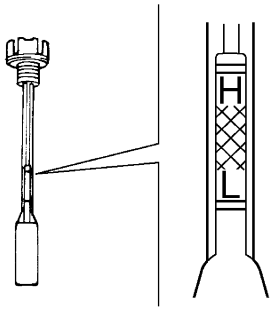
TIP

Dispose of used oil according to local regulations.

10. Install the engine oil drain bolts, and then tighten them to the specified torques.

Tightening torques:
Engine oil drain bolt (crankcase):
30 Nm (3.0 m·kgf, 22 ft·lbf)
Engine oil drain bolt (oil tank):
16 Nm (1.6 m·kgf, 11 ft·lbf)

11. Add 1.5 L (1.59 US qt, 1.32 Imp.qt) of the recommended engine oil to the oil tank, and then install and tighten the oil filler cap.
12. Start the engine, warm it up for several minutes, and then turn it off.
13. Add sufficient oil of the recommended type to raise it to the "H" level mark on the dipstick. (See above for checking procedures.) ***NOTICE:*** **When adding the engine oil, be careful not to fill above the "H" level mark on the dipstick. Use only the recommended oil. (See page 81.) Make sure that no foreign material enters the engine oil tank.** [ECS00462]



Recommended engine oil:
See page 81.
Oil quantity:
With oil filter cartridge replacement:
2.6 L (2.78 US qt, 2.31 Imp.qt)
Without oil filter cartridge replacement:
2.4 L (2.59 US qt, 2.16 Imp.qt)
Total amount:
3.0 L (3.17 US qt, 2.64 Imp.qt)

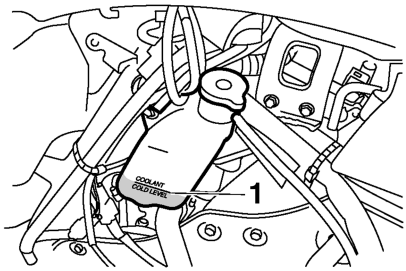
14. Start the engine, and then let it idle for several minutes while checking it for oil leakage. If oil is leaking, immediately turn the engine off and make sure that the engine oil drain bolt, oil tank drain bolt, and the oil filler cap are installed correctly.
15. Turn the engine off, and then connect the oil level gauge coupler.
16. Install the bottom panel and the right lower cover.
17. Install the right side cover (PZ50 / PZ50RT / PZ50GT / PZ50MT), or install the right side cover and the right upper cover, and then close the shroud (PZ50VT). ***NOTICE:*** **If oil is leaking or the oil level warning indicator comes on when the engine is running, immediately turn the engine off and have a Yamaha dealer check the snowmobile. Continuing to operate the engine under such conditions could cause severe engine damage.** [ECS00471]

ESU12043
Cooling system
The coolant level should be checked before each ride. In addition, the cooling system must be bled at the intervals specified in the periodic maintenance and lubrication chart.

EWS00380
⚠ WARNING

Do not remove the coolant reservoir cap when the engine is hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, place a thick rag or towel over the coolant reservoir cap, and slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

To check the coolant level
1. Place the snowmobile on a level surface and apply the parking brake.
2. Remove the top cover (PZ50 / PZ50RT / PZ50GT / PZ50MT) or open the shroud (PZ50VT), and then remove the right upper cover. (See page 49 for removal procedures.)
3. Check the coolant level in the coolant reservoir when the engine is cold. If the coolant level is below the "COLD LEVEL" mark, add soft water until it reaches the "COLD LEVEL" mark. (See the following section "Replenishing the coolant" for more details.) ***NOTICE:*** **Hard water or salt water is harmful to the engine parts. You may use boiled or distilled water, if soft water is not available. Tap water can be used temporarily in an emergency.** [ECS00491]



1. "COLD LEVEL" mark

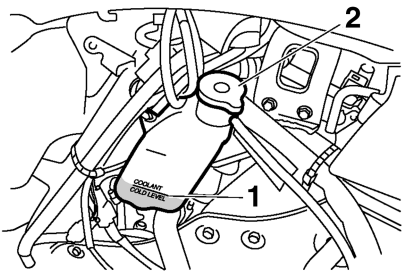
4. Install the right upper cover, and then install the top cover (PZ50 / PZ50RT / PZ50GT / PZ50MT) or close the shroud (PZ50VT).

Bleeding the cooling system
The cooling system must be bled if the coolant reservoir becomes empty, if air can be seen in the cooling system, or if there is a cooling system leak. Consult a Yamaha dealer.

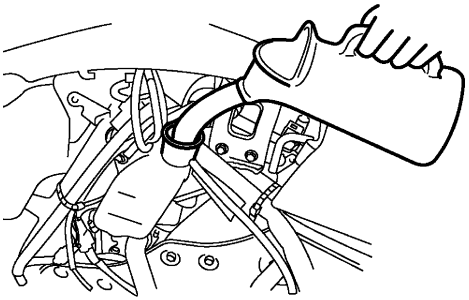
ECS00500
NOTICE

Operating the engine with an improperly bled cooling system can cause overheating and severe engine damage.

Replenishing the coolant
1. Remove the top cover (PZ50 / PZ50RT / PZ50GT / PZ50MT) or open the shroud (PZ50VT), and then remove the right upper cover. (See page 49 for removal procedures.)
2. Remove the coolant reservoir cap, add the recommended coolant until it reaches the "COLD LEVEL" mark, and then install the cap.



1. "COLD LEVEL" mark
2. Coolant reservoir cap



Recommended antifreeze:
High-quality ethylene glycol antifreeze containing corrosion inhibitors
Antifreeze and water mixing ratio:
3:2
Total amount:
PZ50 3.60 L (3.81 US qt, 3.17 Imp.qt)
PZ50GT 3.60 L (3.81 US qt, 3.17 Imp.qt)
PZ50MT 3.60 L (3.81 US qt, 3.17 Imp.qt)
PZ50RT 3.60 L (3.81 US qt, 3.17 Imp.qt)
PZ50VT 3.70 L (3.91 US qt, 3.26 Imp.qt)

3. Start the engine, allow it to idle for several minutes, and then turn it off.
4. Check for any coolant leakage.

TIP

If you find any leaks, consult a Yamaha dealer.

5. Install the right upper cover, and then install the top cover (PZ50 / PZ50RT / PZ50GT / PZ50MT) or close the shroud (PZ50VT).

ESU12081

V-belt

EWS00401

⚠ WARNING

- **Coming in contact with the rotating V-belt or clutch parts can cause severe injury or death. Never run the engine with the drive guard removed.**
- **Make sure that the drive guard is tightened securely before operating the snowmobile to protect against severe injury or death from a broken V-belt or other part should it come off the snowmobile while it is in operation.**

ECS00830

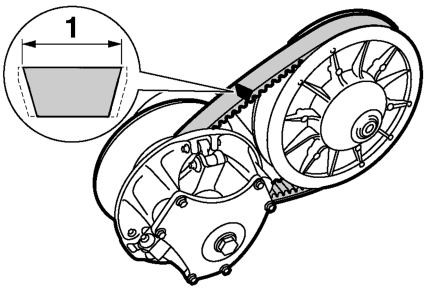
NOTICE

Never run the engine with the V-belt removed. Clutch components can be damaged.

The V-belt should be checked before each ride.

To check the V-belt

1. Remove the left side cover (PZ50 / PZ50RT / PZ50GT / PZ50MT), or open the shroud and remove the left upper cover and the left side cover (PZ50VT). (See page 49 for removal procedure.)
2. Remove the drive guard.
3. Check the V-belt for wear and damage. Replace if necessary.



1. V-belt wear limit

New V-belt width:
34.1 mm (1.34 in)
V-belt wear limit width:
32.5 mm (1.28 in)

4. Install the drive guard.
5. Install the left side cover (PZ50 / PZ50RT / PZ50GT / PZ50MT), or install the left side cover and the left upper cover, and then close the shroud (PZ50VT).

To replace and adjust the V-belt

EWS00421

⚠ WARNING

- **When installing a new V-belt, make sure that it is positioned properly. Otherwise, the V-belt clutch engagement speed will be changed and the snowmobile may move unexpectedly when the engine is started, which could cause an accident.**
- **Have a Yamaha dealer make this adjustment.**

ECS00520

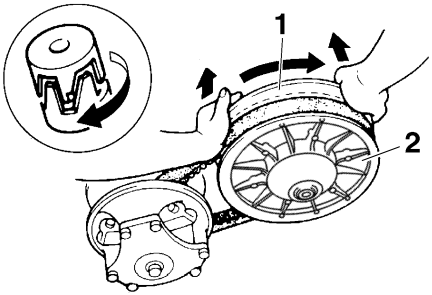
NOTICE

To ensure proper clutch performance as the V-belt wears, it is necessary to adjust the gap between the secondary fixed sheave and the secondary sliding sheave by changing the positions of the spacers. Have a Yamaha dealer make this adjustment.

TIP

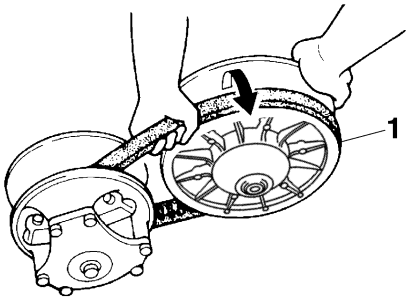
Apply the parking brake before replacing the V-belt.

1. Remove the left side cover (PZ50 / PZ50RT / PZ50GT / PZ50MT), or open the shroud and remove the left upper cover and the left side cover (PZ50VT). (See page 49 for removal procedure.)
2. Remove the drive guard.
3. Rotate the secondary sliding sheave clockwise and push it so that it separates from the secondary fixed sheave.



1. Secondary sliding sheave
2. Secondary fixed sheave

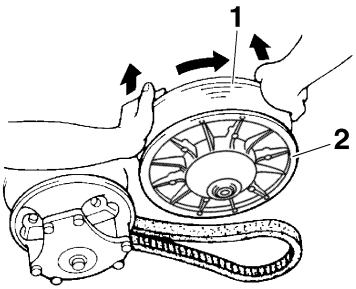
4. Pull the V-belt up over the secondary fixed sheave.



1. V-belt

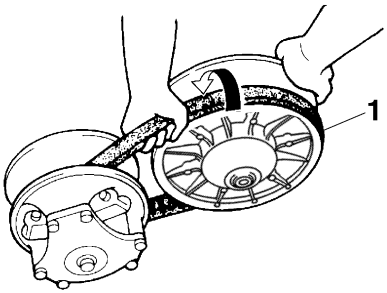
5. Remove the V-belt from the secondary sheave assembly and primary sheave assembly.

6. Install the new V-belt over the primary sheave assembly.
7. Rotate the secondary sliding sheave clockwise and push it so that it separates from the secondary fixed sheave.



1. Secondary sliding sheave
2. Secondary fixed sheave

8. Install the V-belt between the secondary fixed sheave and the secondary sliding sheave.



1. V-belt

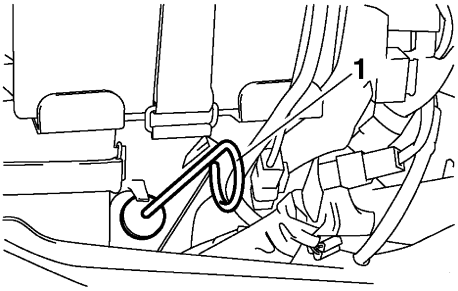
9. Install the drive guard.
10. Install the left side cover (PZ50 / PZ50RT / PZ50GT / PZ50MT), or install the left side cover and the left upper cover, and then close the shroud (PZ50VT).

ESU12124

Drive chain housing

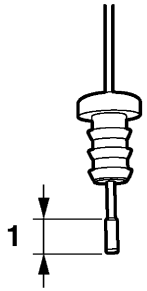
To check the drive chain housing oil level

1. Place the snowmobile on a level surface and apply the parking brake.
2. Remove the right side cover. (See page 49 for removal procedures.)
3. Remove the dipstick, wipe it off with a clean rag, and then insert it back into the filler hole.

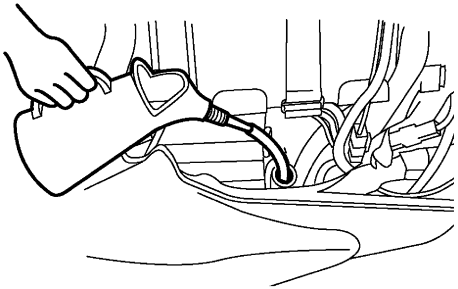


1. Dipstick

4. Remove the dipstick and check that the oil level is within the range shown at the bottom of the dipstick. If the oil does not reach the bottom of the dipstick, add sufficient oil of the recommended type to raise it to the correct level. ***NOTICE:*** **Make sure that no foreign material enters the drive chain housing.** [ECS00531]

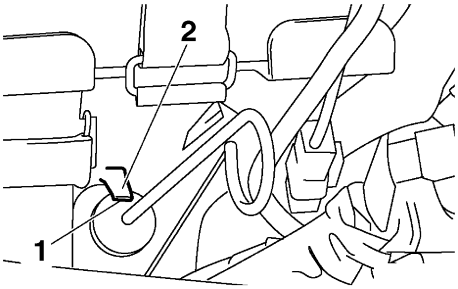


1. Oil level range



Recommended drive chain oil:
SAE 75W or 80W API GL-3 Gear oil

5. Install the dipstick, making sure to align the notch in the dipstick handle with the projection on the drive chain housing.



1. Notch
2. Projection

6. Install the right side cover.

TIP

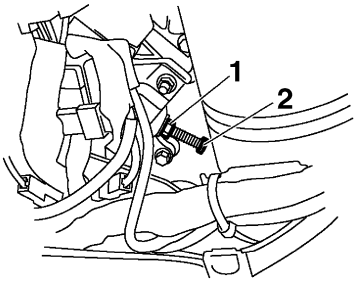
Continue with steps 7 and 8 for models with reverse only.

7. Release the parking brake.
8. Drive the snowmobile for several minutes at more than 20 km/h (12 mi/h), and then repeat steps 1–7 to check the oil level again.

To adjust the chain tension

1. Remove the right side cover. (See page 49 for removal procedures.)
2. Loosen the locknut.
3. Turn the chain tension adjusting bolt clockwise until it is finger tight, and then loosen it 1/4 turn.
4. While holding the chain tension adjusting bolt with a wrench, tighten the locknut to the specified torque.

Tightening torque:
Locknut:
25 Nm (2.5 m·kgf, 18 ft·lbf)



1. Locknut
2. Chain tension adjusting bolt

5. Install the right side cover.

ESU12132

Brake and parking brake

EWS00440

⚠ WARNING

- **A soft, spongy feeling in the brake lever indicates a failure in the brake system.**
- **Do not operate the snowmobile if you find any problems in the brake system. You could lose braking ability, which could lead to an accident. Ask a Yamaha dealer to inspect and repair the brake system.**

ECS00060

NOTICE

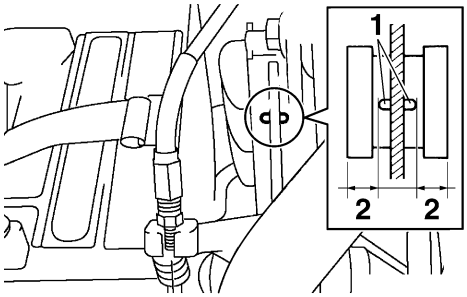
Make sure that the brake lever end does not project out over the handlebar end. This will help prevent brake lever damage when the snowmobile is placed on its side for service.

Test the brake at a low speed when starting out to make sure that it is working properly. If the brake does not provide proper braking performance, inspect the brake for wear or brake fluid leakage. (See the following section for more details.)

Checking the brake pads

Check the brake pads for wear.

If the brake pads reach the wear limit, ask a Yamaha dealer to replace them.

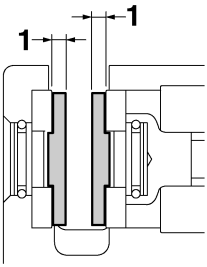


1. Brake pad wear indicator
2. Brake pad wear limit

Brake pad wear limit:
4.7 mm (0.19 in)

Checking the parking brake pads

Check the parking brake pads for wear by measuring the thickness of the pads. If the parking brake pads reach the wear limit, ask a Yamaha dealer to replace them.



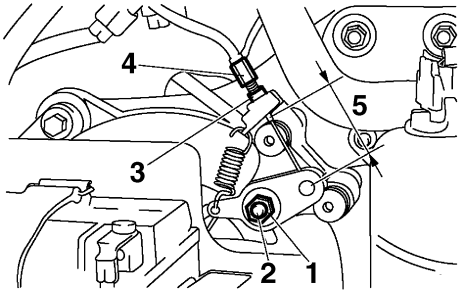
1. Parking brake pad wear limit

Parking brake pad wear limit:
1.2 mm (0.047 in)

To adjust the parking brake

As the parking brake pads wear, adjustment may be necessary to ensure proper brake performance.

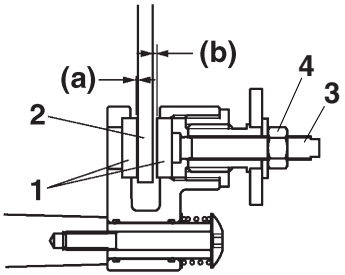
1. Loosen the parking brake pad locknut and the parking brake pad adjusting bolt.
2. Loosen the parking brake cable locknut.
3. Turn the parking brake cable adjusting bolt in or out to adjust the cable length.



1. Parking brake pad locknut
2. Parking brake pad adjusting bolt
3. Parking brake cable locknut
4. Parking brake cable adjusting bolt
5. Parking brake cable length

Parking brake cable length:
43.5–46.5 mm (1.713–1.831 in)

4. Tighten the parking brake cable locknut.
5. Turn the parking brake pad adjusting bolt in or out to adjust the clearance between the parking brake pads and the brake disc.



1. Parking brake pad
2. Brake disc
3. Parking brake pad adjusting bolt
4. Parking brake pad locknut

Parking brake pad to brake disc clearance (a) + (b):
1.5–2.0 mm (0.059–0.079 in)

6. Tighten the parking brake pad locknut.

Checking the brake fluid level

EWS00460

⚠ WARNING

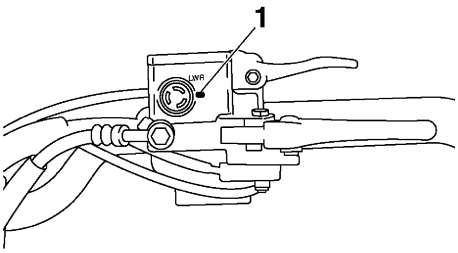
Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.
If the brake fluid level goes down, consult a Yamaha dealer.

ECS00550

NOTICE

Brake fluid may deteriorate painted surfaces or plastic parts. Never spill any fluid. If any is spilled, clean it up immediately.

Place the snowmobile on a level surface. Check that the brake fluid is above the lower level and replenish when necessary.



1. Lower level

Specified brake fluid:
DOT 4

Changing the brake fluid

EWS00471

⚠ WARNING

Make sure that the brake fluid and the following parts are replaced by a Yamaha dealer.

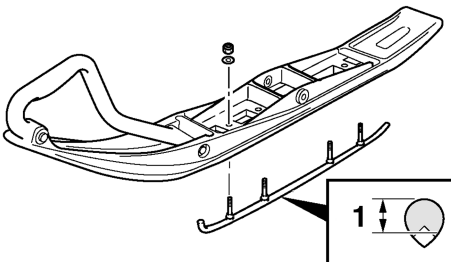
Brake fluid replacement is necessary when the following components are replaced during the periodic maintenance or if they are damaged or leaking.

- All oil seals of the master cylinder and caliper cylinder
- The brake hose

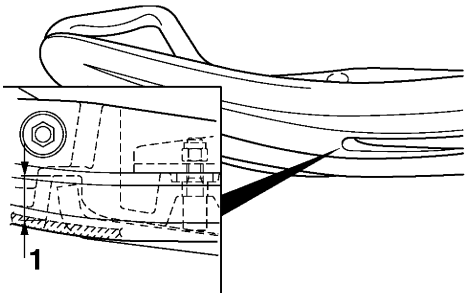
ESU12142

Skis and ski runners

Check the skis and ski runners for wear and damage. Replace if necessary.



1. Ski runner wear limit



1. Ski wear limit

Ski runner wear limit: 6 mm (0.2 in) Ski wear limit: PZ50 13 mm (0.5 in) PZ50GT 13 mm (0.5 in) PZ50MT 24 mm (0.9 in) PZ50RT 13 mm (0.5 in) PZ50VT 13 mm (0.5 in)

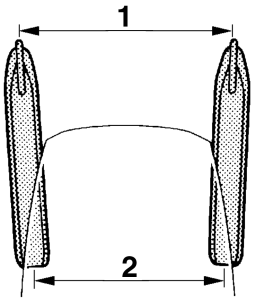
ECS00560

NOTICE

Avoid scratching the skis when loading and unloading the snowmobile, when riding in areas with little or no snow, or on sharp edges such as concrete, curbs, etc. This will wear or damage the skis.

To align the skis

1. Turn the handlebar so the skis face straight ahead.
2. Check the following for ski alignment:
   - Skis are facing forward.
   - Ski toe-out (distance A – distance B) is within specification.



1. Distance A
2. Distance B

Ski toe-out (distance A – distance B): 0.0–15.0 mm (0.00–0.59 in)

3. If the alignment is not correct, consult a Yamaha dealer.

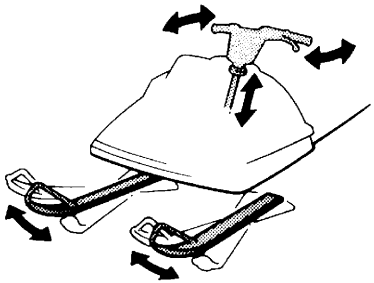
ESU12151

Steering system

Check the handlebar for excessive free play.

To check the handlebar

1. Push the handlebar up and down and back and forth.
2. Turn the handlebar slightly to the right and left.



If excessive free play is felt, consult a Yamaha dealer.

ESU12173

Drive track and slide runners

Drive track

EWS00480

⚠ WARNING

A broken track, track fittings or debris thrown by the drive track could be dangerous to an operator or bystanders. Observe the following precautions:

- **Do not allow anyone to stand behind the snowmobile when the engine is running.**
- **When the rear of the snowmobile is raised to allow the drive track to spin, a suitable stand must be used to support the rear of the snowmobile. Never allow anyone to hold the rear of the snowmobile off the ground to allow the drive track to spin. Never allow anyone near a rotating drive track.**
- **Inspect the drive track condition frequently. Replace damaged slide metal. Replace the drive track if it is damaged to the depth where fabric reinforcement material is visible or support rods are broken. Otherwise, track damage or failure could result in loss of braking ability and snowmobile control, which could cause an accident.**

Checking the drive track

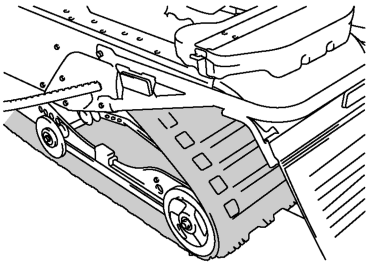
EWS00490

⚠ WARNING

Do not operate the snowmobile if you find damage to the drive track, or if it has been maladjusted. Drive track damage or failure could result in loss of braking ability and snowmobile control, which could cause an accident.

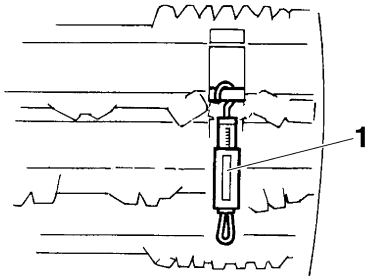
Check the drive track for deflection, wear, and damage.

Adjust or replace if necessary. (See the following section for more details.)



Measuring the drive track deflection

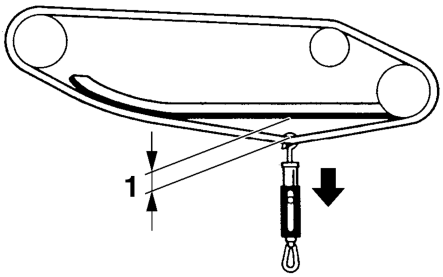
1. Lay the snowmobile on its side.
2. Measure the drive track deflection with a spring scale. Pull at the center of the drive track with a force of 100 N (10 kgf, 22 lbf).



1. Spring scale

TIP

Measure the gap between the slide runner and the edge of the track window. Measure both sides.



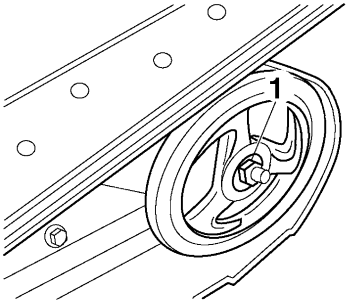
1. Drive track deflection

Standard drive track deflection:
30.0–35.0 mm (1.18–1.38 in)

3. If the deflection is incorrect, adjust the drive track.

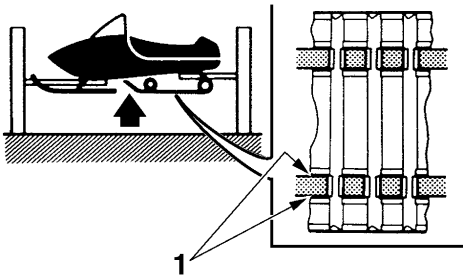
Adjusting the drive track

1. Lift the rear of the snowmobile onto a suitable stand to raise the drive track off the ground.
2. Loosen the rear axle nut.



1. Rear axle nut

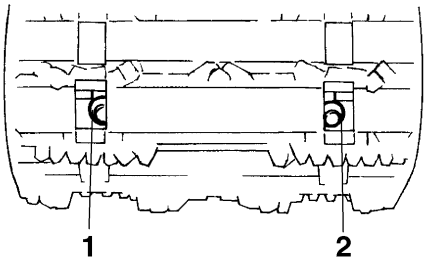
3. Start the engine and rotate the drive track one or two turns. Stop the engine.
4. Check the drive track alignment with the slide runners. If the alignment is incorrect, align the drive track by turning the left and right adjusting nuts.



1. Slide runner

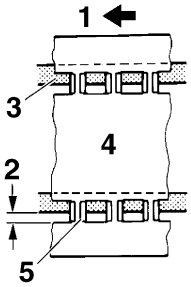
Drive track alignment	Shifted to right	Shifted to left
Left adjusting nut	Turn out	Turn in

Drive track alignment	Shifted to right	Shifted to left
Right adjusting nut	Turn in	Turn out



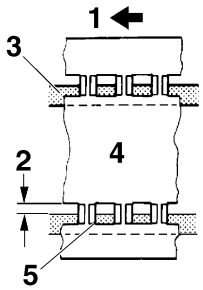
1. Left adjusting nut
2. Right adjusting nut

Shifted to right



1. Forward
2. Gap
3. Slide runner
4. Drive track
5. Slide metal

Shifted to left



1. Forward
2. Gap
3. Slide runner
4. Drive track
5. Slide metal

5. Adjust the drive track deflection to specification. ***NOTICE:*** **The right and left adjusting nuts should be turned an equal amount.** [ECS00592]

Drive track deflection	More than specified	Less than specified
Left adjusting nut	Turn in	Turn out
Right adjusting nut	Turn in	Turn out

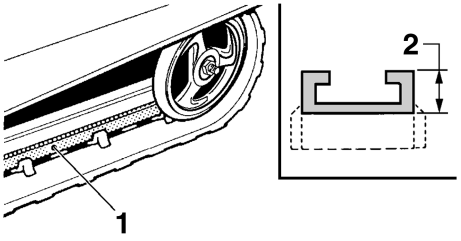
6. Recheck alignment and deflection. If necessary, repeat steps 3 to 5 until the proper adjustment is achieved.
7. Tighten the rear axle nut.

Rear axle nut tightening torque:
75 Nm (7.5 m·kgf, 54 ft·lbf)

Slide runners

Check the slide runners for wear and damage.

If the slide runners reach the wear limit, they should be replaced.



1. Slide runner
2. Wear limit height

Slide runner wear limit height:
10.5 mm (0.41 in)

ECS00350

NOTICE

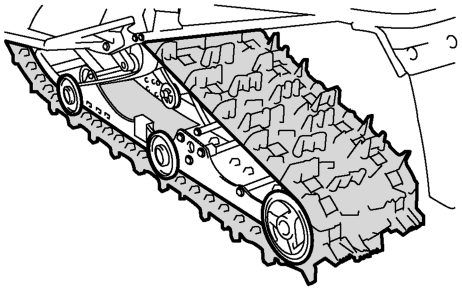
Ride on fresh snow frequently. Operating on ice or hard-packed snow will rapidly wear the slide runners.

ESU12180

High-profile pattern drive track (PZ50MT)

This snowmobile is originally equipped with a 51-mm (2.0-in) high-profile pattern drive track specifically for use in deep snow riding conditions.

Therefore, avoid prolonged operation on hard surfaces such as ice, hard-packed snow, dirt, etc., to extend the life of the track and slide runners.



ECS00610

NOTICE

- **Only use in deep snow riding conditions.**
- **Operation on areas with light snowfall, ice, hard-packed snow, dirt, or grass will result in rapid wear or damage to the track and slide runners from lack of snow which serves as a lubricant.**

ESU12193

Lubrication

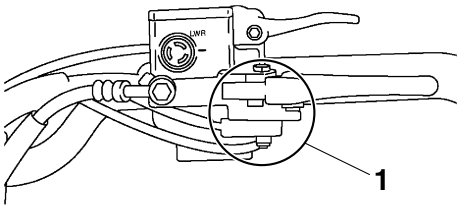
Lubricate the following points with the specified grease.

EWS00511

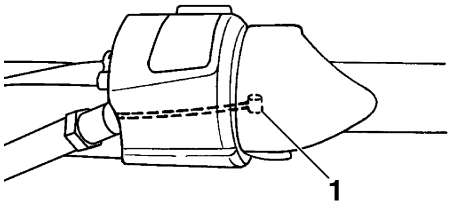
⚠ WARNING

Do not grease the throttle cable because it could become frozen, which could cause loss of control. Apply a dab of grease onto the cable end only.

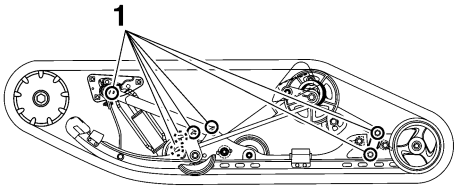
Lubricants:
- Brake lever:
  - Silicone grease
- Other lubrication points:
  - Low-temperature grease



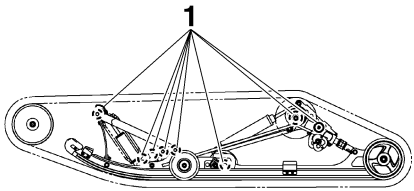
1. Lubrication point



1. Throttle cable end



1. Lubrication point



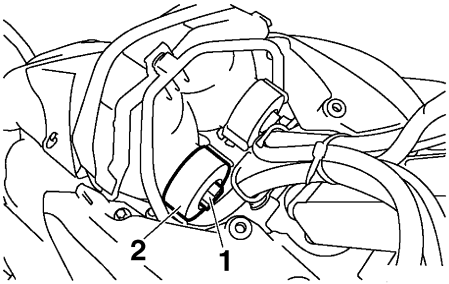
1. Lubrication point

ESU12241

Replacing a headlight bulb

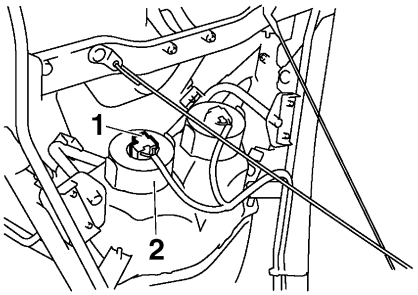
1. Remove the top cover (PZ50 / PZ50RT / PZ50GT / PZ50MT) or open the shroud (PZ50VT). (See page 49 for removal procedures.)
2. Disconnect the headlight coupler.
3. Remove the bulb holder cover.

PZ50 / PZ50RT / PZ50GT / PZ50MT



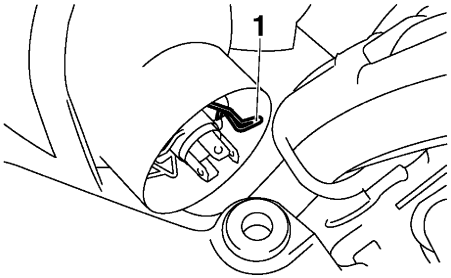
1. Headlight coupler
2. Bulb holder cover

PZ50VT



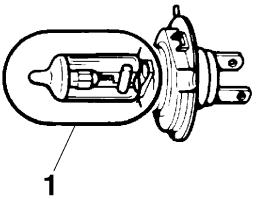
1. Headlight coupler
2. Bulb holder cover

4. Unhook the bulb holder by pushing it in, then downward.



1. Bulb holder

5. Remove the bulb.
6. Install the new bulb, and then hook the bulb holder onto the headlight unit. ***NOTICE:*** **Keep oil and your hands away from the glass part of the bulb or its life and illumination will be affected. If the glass is oil stained, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.** [ECS00621]



1. Do not touch the glass part of the bulb.

Bulb type:
Halogen bulb

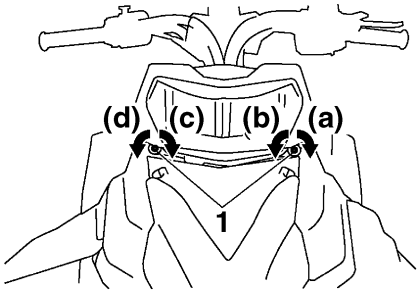
7. Install the bulb holder cover, and then connect the headlight coupler.
8. Install the top cover (PZ50 / PZ50RT / PZ50GT / PZ50MT) or close the shroud (PZ50VT).

ESU12280

Adjusting the headlight beams

Turn the headlight beam adjusting screws in or out to adjust the headlight beams. The headlight beams move as follows depending on the turning direction of the headlight beam adjusting screws.

- Direction (a): Down and to the left
- Direction (b): Up and to the right
- Direction (c): Down and to the right
- Direction (d): Up and to the left



1. Headlight beam adjusting screw

ESU12290

Fittings and fasteners

Check the tightness of the fittings and fasteners.

Tighten in proper sequence and torque if necessary.

ESU12303

Battery

This model is equipped with a VRLA (Valve Regulated Lead Acid) battery. There is no need to check the electrolyte or to add distilled water. However, the battery lead connections need to be checked and, if necessary, tightened.

EWS00540

⚠ WARNING

Battery electrolyte is poisonous and dangerous. It contains sulfuric acid and can cause severe burns. Avoid contact with skin, eyes, or clothing.

ANTIDOTE:

- **EXTERNAL: Flush with water.**
- **INTERNAL: Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call physician immediately.**
- **EYES: Flush with water for 15 minutes and get prompt medical attention.**

Batteries produce explosive gases. Keep sparks, flame, cigarettes, etc. away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries.

KEEP OUT OF THE REACH OF CHILDREN.

Charge or have a Yamaha dealer charge the battery as soon as possible if it seems to have discharged. Keep in mind that the battery tends to discharge more quickly if the snowmobile is equipped with electrical accessories.

EWS00610

⚠ WARNING

- **Never smoke around the battery while it is being charged. Sparks may ignite the hydrogen gas created by the battery.**
- **Disconnect the negative lead first, then the positive lead from the battery.**
- **Connect the positive lead first, then the negative lead to the battery when installing the battery.**
- **Never connect the battery to or disconnect it from the snowmobile while it is being charged. Sparks may ignite the hydrogen gas created by the battery.**
- **Make sure that the battery terminals are tight.**

ECS00842

NOTICE

- **To charge a VRLA (Valve Regulated Lead Acid) battery, a special (constant-voltage) battery charger is required. If you do not have access to a constant-voltage battery charger, have a Yamaha dealer charge your battery. Using a conventional battery charger will damage the battery.**
- **Do not charge the battery quickly.**

ESU12353
Replacing a fuse

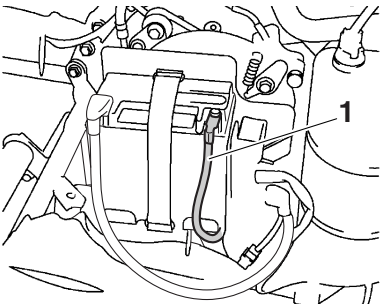
EWS00550
⚠ WARNING

Be sure to use the specified fuse. A wrong fuse could cause electrical system damage or A FIRE HAZARD.

ECS00631
NOTICE

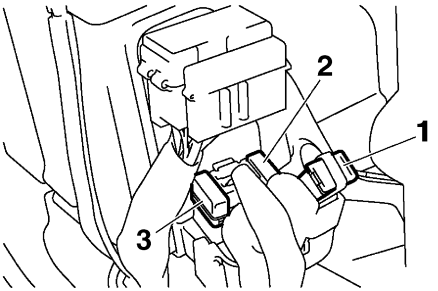
Be sure to turn the main switch to the off position and disconnect the negative battery lead to prevent accidental short-circuiting.

1. Remove the right side cover. (See page 49 for removal procedures.)
2. Disconnect the negative battery lead by removing the bolt.



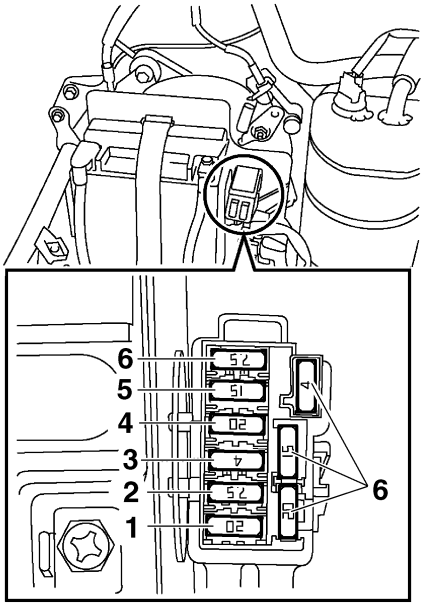
1. Negative battery lead

3. Replace the blown fuse with one of the proper amperage.



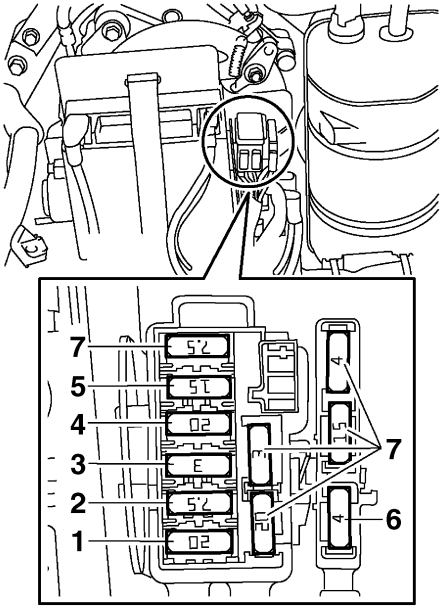
1. Main fuse
2. Spare fuse
3. Fuel injection system fuse

PZ50



1. “HEAD” (headlight) fuse
2. “SIG” (signal) fuse
3. “GEAR” (electric shift reverse system) fuse
4. “IGN” (ignition) fuse
5. “FAN” (radiator fan) fuse
6. Spare fuse

PZ50RT / PZ50GT / PZ50MT / PZ50VT



1. “HEAD” (headlight) fuse
2. “SIG” (signal) fuse
3. “DC TERM” (auxiliary DC jack) fuse
4. “IGN” (ignition) fuse
5. “FAN” (radiator fan) fuse
6. “GEAR” (electric shift reverse system) fuse
7. Spare fuse

Specified fuses:
- Main fuse:
  - 40.0 A
- Fuel injection system fuse:
  - 10.0 A
- “HEAD” (headlight) fuse:
  - 20.0 A
- “SIG” (signal) fuse:
  - 7.5 A
- “DC TERM” (auxiliary DC jack) fuse:
  - PZ50GT 3.0 A
  - PZ50MT 3.0 A
  - PZ50RT 3.0 A
  - PZ50VT 3.0 A
- “IGN” (ignition) fuse:
  - 20.0 A
- “FAN” (radiator fan motor) fuse:
  - 15.0 A
- “GEAR” (electric shift reverse system) fuse:
  - 4.0 A
- Spare fuses:
  - 20.0 A
  - 15.0 A
  - 7.5 A
  - 4.0 A
  - 3.0 A (PZ50RT / PZ50GT / PZ50MT / PZ50VT)

4. Connect the negative battery lead by installing the bolt.
5. Install the right side cover.

TIP

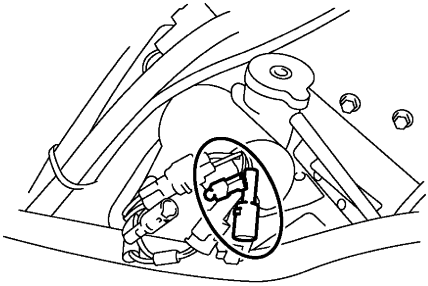
If the fuse immediately blows again, ask a Yamaha dealer to inspect the snowmobile.

ESU12396

Engine turns over but does not start

1. Fuel system
   - No fuel supplied to combustion chamber
     - No fuel in tank:
       Supply fuel.
       ↓
     - Clogged fuel line:
       Clean fuel line.
       ↓
     - Clogged injector:
       Ask a Yamaha dealer to inspect.
   - Fuel supplied to combustion chamber
     - Flooded engine:
       Crank engine or wipe the spark plugs dry.
2. Electrical system
   - Poor spark or no spark
     - Spark plugs are dirty with carbon or are wet:
       Remove carbon or wipe the spark plugs dry. Replace if necessary.
       ↓
     - Faulty ignition system:
       Ask a Yamaha dealer to inspect.
       ↓
     - T.O.R.S. malfunction:
       Disconnect the throttle switch connectors and connect the wire harness connectors together to bypass the T.O.R.S. **WARNING! Before bypassing the T.O.R.S., make sure that the throttle returns properly to the fully closed position. The T.O.R.S. is an important safety device; in the case of a malfunction, take the snowmobile to a Yamaha dealer immediately for repair.**

       [EWS00561]



3. Compression
   - Insufficient
     - Loose cylinder head nuts:
       Tighten nuts properly.
       ↓
     - Worn or damaged gasket:
       Replace gasket.
       ↓
     - Worn or damaged piston and cylinder:
       Ask a Yamaha dealer to inspect.

Discharged battery

If the battery is discharged, the engine can be started using a fully-charged 12-volt battery and jumper cables.

EWS00580

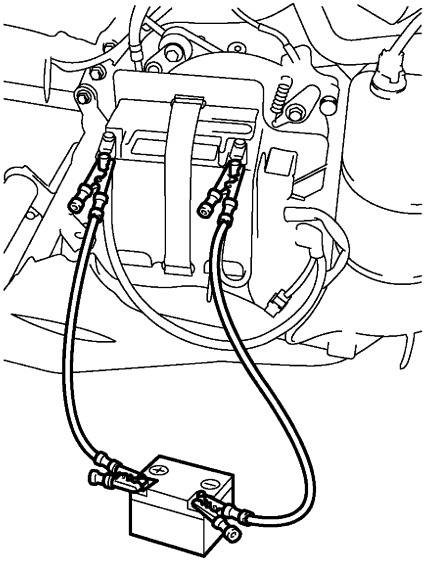
⚠ WARNING

- **Connect the jumper cables only to the battery terminals. Do not connect them to the frame or any wire or other lead.**
- **When connecting the jumper cables, do not contact the jumper cables to each other or to the frame or any metal part of the snowmobile. This can cause electrical system damage or A FIRE HAZARD.**

1. Apply the parking brake and turn the main switch to the off position.
2. Remove the right side cover. (See page 49 for removal procedures.)
3. Connect the red (+) jumper cable to the positive (+) terminal of the discharged battery.

4. Connect the other end of the red (+) jumper cable to the positive (+) terminal of the booster battery.
5. Connect the black (–) jumper cable to the negative (–) terminal of the booster battery.
6. Connect the other end of the black (–) jumper cable to the negative (–) terminal of the discharged battery. ***NOTICE:*** **Do not reverse the connections! Make sure that all connections are secure and correct before attempting to start the engine. Any wrong connection could damage the electrical system.**

[ECS00671]



7. Start the engine.
8. Disconnect the black (–) jumper cable from the negative (–) terminal of the discharged battery.
9. Disconnect the black (–) jumper cable from the negative (–) terminal of the battery used to jump start the engine.
10. Disconnect the red (+) jumper cable from the positive (+) terminal of the battery used to jump start the engine.
11. Disconnect the red (+) jumper cable from the positive (+) terminal of the discharged battery.
12. Install the right side cover.

Electric starter does not operate or operates slowly

1. Engine stop switch is pushed in: Pull it out.
2. Faulty wire connections: Check connections or ask a Yamaha dealer to inspect.
3. Discharged battery: Charge battery or see “Discharged battery” above.
4. Seized engine: Seizure is caused by poor lubrication, inadequate fuel, or an air leak. Ask a Yamaha dealer to inspect.

Engine power is low

1. Low coolant temperature indicator light is flashing: Warm the engine up.
2. Faulty spark plugs: Clean or replace the spark plugs.
3. Improper fuel flow: See “Fuel system” above.
4. Incorrect V-belt clutch settings for altitude or conditions: Ask a Yamaha dealer to inspect.

Engine constantly backfires or misfires

1. Faulty spark plugs: Replace the spark plugs.
2. Clogged fuel system: See “Fuel system” above.
3. Malfunctioning T.O.R.S.: See “Electrical system” above.

Engine overheats

1. Insufficient coolant: Add coolant.

2. Air in cooling system: Bleed the cooling system or ask a Yamaha dealer to inspect.
3. Leaking coolant: Ask a Yamaha dealer to inspect.

Snowmobile does not move

1. Malfunctioning V-belt clutch: Ask a Yamaha dealer to inspect.
2. Drive track does not move: Foreign object is caught in the drive track, or slide runners have melted to the slide metal due to lack of lubrication.
3. Tight, loose, or broken drive chain: Ask a Yamaha dealer to inspect.

V-belt twists

1. Improper V-belt: Replace with the correct V-belt.
2. Incorrect V-belt clutch offset: Ask a Yamaha dealer to inspect.
3. Loose or broken engine mount(s): Ask a Yamaha dealer to inspect.

V-belt slips or becomes extremely hot

1. Oily or dirty V-belt or primary and secondary sheave assembly surfaces: Clean.
2. Problem with the driveline: See “V-belt twists” above.

Engine does not upshift or downshift properly or engages harshly

1. Worn or damaged V-belt: Replace the V-belt or ask a Yamaha dealer to inspect.
2. Incorrect V-belt clutch settings for altitude or conditions: Ask a Yamaha dealer to inspect.
3. Worn or sticking primary sheave assembly: Ask a Yamaha dealer to inspect.
4. Worn or sticking secondary sheave assembly: Ask a Yamaha dealer to inspect.

Noise or excessive vibration in drive chain and sprockets

1. Broken V-belt clutch components: Ask a Yamaha dealer to inspect.
2. Worn or damaged bearings: Ask a Yamaha dealer to inspect.
3. Worn or damaged V-belt with flat spots: Replace.
4. Worn or damaged idler wheels or shafts: Ask a Yamaha dealer to inspect.
5. Worn or damaged drive track: Ask a Yamaha dealer to inspect.

ESU12433

Long-term storage requires some preventive procedures to guard against deterioration.

Cleaning

Thoroughly clean the snowmobile, inside and out, to remove the corrosive salts and acids that can accumulate. Use Yamaha Mud, Grease, and Engine Cleaner, or an equivalent product, to loosen mud, grease, and grime. Wash with mild soap, then rinse and dry completely.

ECS00870

NOTICE

- **Improper cleaning can damage plastic parts such as shroud, covers, windshields, headlight lenses, meter lenses, etc. Use only a soft, clean cloth or sponge with mild detergent and water to clean plastic.**
- **Do not use any harsh chemical products on plastic parts. Be sure to avoid using cloths or sponges which have been in contact with strong or abrasive cleaning products, solvent or thinner, fuel (gasoline), rust removers or inhibitors, brake fluid, antifreeze or electrolyte.**
- **Do not use high-pressure washers or steam-jet cleaners since they cause water seepage and deterioration in the following areas: seals (of the slide rail suspension, front suspension and brakes), electric components (couplers, connectors, instruments, switches and lights), breather hoses and vents.**
- **For snowmobiles equipped with a windshield: Do not use strong cleaners or hard sponges as they will cause dulling or scratching. Some cleaning compounds for plastic may leave scratches on the windshield. Test the product on a small hidden part of the windshield to make sure that it does not leave any marks. If the windshield is scratched, use a quality plastic polishing compound after washing.**

Lubrication

Lubricate moving parts, suspension linkage, and pivot points. Use the grease or lubricant specified in the MAINTENANCE section, or Yamaha Lube-Zall general-purpose lubricant. Proper lubrication fights corrosion while it reduces friction.

Fuel system

Add Yamaha Fuel Stabilizer and Conditioner, or an equivalent stabilizer, to the fuel tank to help prevent fuel oxidation and gum and varnish deposits, and to inhibit corrosion in the fuel system and injectors. In areas where oxygenated fuel (gasohol) is used, consult a Yamaha dealer.

Engine

Proper storage of the engine is essential to prevent costly rust and corrosion damage to internal engine components. This is more important in areas where oxygenated fuel (gasohol) is used, because the alcohol content in the fuel increases the chance for water to enter the engine. Use Yamaha Stor-Rite Engine Fogging Oil, or an equivalent fogging oil, to protect both the combustion chamber and crankshaft from corrosion. An alternate method is to remove the intake silencer and squirt oil into the throttle bodies while the engine is running. ***NOTICE:*** **Do not simply start the engine when in storage, starting the engine occasionally during the storage period can cause more harm than good. Moisture and acids form during combustion which can actually increase the chance for corrosion damage during the storage period.** [ECS00681]

Surface protection

Apply a coat of wax to painted surfaces. Apply suitable protectants to the exterior of the engine, drive track, and to other metal, plastic, and rubber parts.

Battery

Remove the battery from the snowmobile. Store it in a cool, dry place that is above 0 °C (32 °F), but less than 30 °C (90 °F). Check the condition of the battery once a month, and charge it as necessary. ***NOTICE:*** **Always keep the battery charged. Storing a discharged battery can cause permanent battery damage.** [ECS00691]

Drive track

Loosen the drive track and block up the chassis so that the track is suspended above the ground.

V-belt

Remove the V-belt and store separately.

Storage

Store the snowmobile in a dry, well-ventilated place out of direct sunlight. Put a fabric cover over the snowmobile, preferably one that is designed for it. Do not use a plastic or vinyl cover—condensation could be trapped underneath which could increase the chances of rusting.

Returning to service after storage

When returning your snowmobile to service, install the V-belt and battery and adjust the drive track.

Remove the spark plugs and clean or replace them if necessary. Perform all other pre-operation and seasonal maintenance checks listed in the periodic maintenance chart.

TIP

Before installing the battery, have a Yamaha dealer inspect and fully charge it.

For peak performance, it is recommended that you have your snowmobile checked and tuned by a Yamaha dealer. The dealer has the experience and training to help you get the maximum performance and use out of your Yamaha snowmobile.

ESU12466

Dimensions:

- Overall length:
  - PZ50 2820 mm (111.0 in)
  - PZ50GT 2820 mm (111.0 in)
  - PZ50MT 3195 mm (125.8 in)
  - PZ50RT 2820 mm (111.0 in)
  - PZ50VT 3150 mm (124.0 in)
- Overall width:
  - PZ50 1215 mm (47.8 in)
  - PZ50GT 1215 mm (47.8 in)
  - PZ50MT 1165 mm (45.9 in)
  - PZ50RT 1215 mm (47.8 in)
  - PZ50VT 1215 mm (47.8 in)
- Overall height:
  - PZ50 1190 mm (46.9 in)
  - PZ50GT 1340 mm (52.8 in)
  - PZ50MT 1190 mm (46.9 in)
  - PZ50RT 1190 mm (46.9 in)
  - PZ50VT 1380 mm (54.3 in)
- Dry weight:
  - PZ50 216.0 kg (476 lb)
  - PZ50GT 222.0 kg (489 lb)
  - PZ50MT 234.0 kg (516 lb)
  - PZ50RT 222.0 kg (489 lb)
  - PZ50VT 269.0 kg (593 lb)
- Ski stance:
  - PZ50 1080 mm (42.5 in)
  - PZ50GT 1080 mm (42.5 in)
  - PZ50MT 980 mm (38.6 in)
  - PZ50RT 1080 mm (42.5 in)
  - PZ50VT 1080 mm (42.5 in)

Engine:

- Type:
  - Liquid cooled 4-stroke, 10 valves
- Cylinder arrangement:
  - Backward-inclined parallel 2-cylinder
- Displacement:
  - 499.0 cm^3
- Bore × stroke:
  - 77.0 × 53.6 mm (3.03 × 2.11 in)
- Idling speed:
  - 1700–1900 r/min
- Engine oil:
  - Recommended grade:
    - API service SG type or higher, JASO standard MA
  - Type:
    - YAMALUBE 4 0W-30, SAE 0W-30
- Fuel injection:
  - Model × quantity:
    - TSK43 × 1
  - Manufacturer:
    - KEIHIN
- Fuel:
  - Type:
    - PREMIUM UNLEADED GASOLINE ONLY
  - Minimum pump octane (R+M)/2:
    - 91
- Starting system:
  - Electric starter

Chassis:

- Drive track:
  - Material:
    - Molded rubber, fiberglass-rod reinforced
  - Type:
    - Internal drive type
  - Width:
    - PZ50 356 mm (14.0 in)
    - PZ50GT 356 mm (14.0 in)
    - PZ50MT 356 mm (14.0 in)
    - PZ50RT 356 mm (14.0 in)
    - PZ50VT 381 mm (15.0 in)
  - Deflection:
    - 30.0–35.0 mm (1.18–1.38 in)
  - Length on ground:
    - PZ50 769 mm (30.3 in)
    - PZ50GT 769 mm (30.3 in)
    - PZ50MT 1084 mm (42.7 in)
    - PZ50RT 769 mm (30.3 in)
    - PZ50VT 985 mm (38.8 in)
- Rear suspension:
  - Type:
    - Slide rail suspension
- Track sprocket wheel:
  - Material:
    - Polyethylene
  - Number of teeth:
    - PZ50 9
    - PZ50GT 9
    - PZ50MT 8
    - PZ50RT 9
    - PZ50VT 9
- Transmission:
  - Clutch type:
    - Automatic centrifugal engagement

Overall reduction ratio:
PZ50 8.66–2.16 :1
PZ50GT 7.79–1.95 :1
PZ50MT 9.16–2.29 :1
PZ50RT 8.66–2.16 :1
PZ50VT 9.00–2.25 :1
Sheave distance:
267.0–270.0 mm (10.51–10.63 in)
Sheave offset:
14.5–17.5 mm (0.57–0.69 in)
Engagement speed (Subject to change according to elevation settings.):
PZ50 3700–4100 r/min
PZ50GT 3700–4100 r/min
PZ50MT 4100–4500 r/min
PZ50RT 3700–4100 r/min
PZ50VT 3300–3700 r/min
Shift speed [Subject to change according to elevation settings. Usually achieved after approximately 800 m (0.5 mi) traveled.]:
10800–11800 r/min
Drive chain type:
Silent chain enclosed in oil bath
Drive chain housing oil:
Type:
SAE 75W or 80W API GL-3 Gear oil
Capacity:
0.25 L (0.26 US qt, 0.22 Imp.qt)
Reverse system:
PZ50 No
PZ50GT Yes
PZ50MT Yes
PZ50RT Yes
PZ50VT Yes
Primary reduction ratio:
3.80–0.95 :1
Secondary reduction ratio:
PZ50 41/18 (2.28)
PZ50GT 41/20 (2.05)
PZ50MT 41/17 (2.41)
PZ50RT 41/18 (2.28)
PZ50VT 45/19 (2.37)
Secondary reduction ratio [R]:
PZ50GT 2.73
PZ50MT 3.22
PZ50RT 3.04
PZ50VT 3.16
Fuel tank capacity:
PZ50 26.7 L (7.05 US gal, 5.87 Imp.gal)
PZ50GT 26.7 L (7.05 US gal, 5.87 Imp.gal)
PZ50MT 26.7 L (7.05 US gal, 5.87 Imp.gal)
PZ50RT 26.7 L (7.05 US gal, 5.87 Imp.gal)
PZ50VT 32.9 L (8.69 US gal, 7.24 Imp.gal)
Engine oil quantity:
With oil filter cartridge replacement:
2.6 L (2.78 US qt, 2.31 Imp.qt)
Without oil filter cartridge replacement:
2.4 L (2.59 US qt, 2.16 Imp.qt)
Total amount:
3.0 L (3.17 US qt, 2.64 Imp.qt)
Brake:
Type:
Hydraulic disc type (ventilated disc)
Operation:
Handle lever, left-hand operated
Throttle:
Operation:
Handle lever, right-hand operated

Electrical system:

Ignition system:
T.C.I.
Spark plug:
Manufacturer:
NGK
Model:
CR9EKB
Gap:
0.6–0.7 mm (0.024–0.028 in)
Battery:
Model:
YTX14-BS
Voltage, capacity:
12 V, 12.0 Ah
Ten-hour rate amperage:
1.2 A
Bulb voltage, wattage × quantity:
Headlight:
12 V, 60/55 W × 2
Headlight bulb type:
Halogen bulb
Tail/brake light:
LED
Meter lighting:
LED
High beam indicator light:
LED
Warning light:
LED

Low coolant temperature indicator light:
LED
Knock control system indicator light:
LED
Drive position indicator light:
PZ50GT LED
PZ50MT LED
PZ50RT LED
PZ50VT LED
Reverse position indicator light:
PZ50GT LED
PZ50MT LED
PZ50RT LED
PZ50VT LED

ESU12480

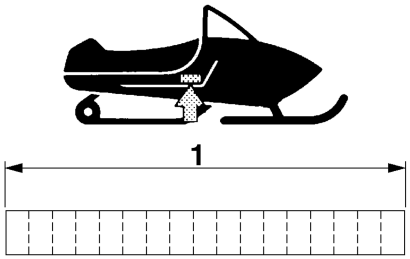
Identification number records

Record the frame serial number, engine serial number (Primary ID), and key identification number in the spaces provided for assistance when ordering spare parts from a Yamaha dealer.

Also, record and keep the ID numbers in a separate place in case the snowmobile is stolen.

Frame serial number

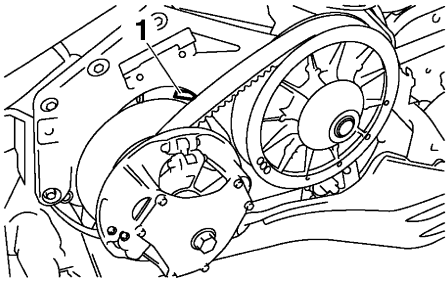
The frame serial number is the seventeen-digit number stamped on the frame of the snowmobile.



1. Frame serial number

Engine serial number (Primary ID)

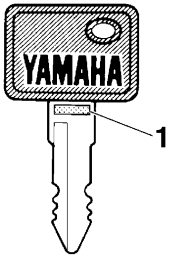
The engine serial number is stamped in the location as shown.



1. Engine serial number

Key identification number

The key identification number is stamped in the location as shown.



1. Key identification number

ESU12500

YAMAHA MOTOR CORPORATION, U.S.A. SNOWMOBILE LIMITED WARRANTY

Yamaha Motor Corporation, U.S.A. hereby warrants that new Yamaha snowmobiles purchased from an authorized Yamaha snowmobile dealer in the continental United States will be free from defects in material and workmanship for the period of time stated herein, subject to certain stated limitations.

WARRANTY PERIOD:

1. All Yamaha snowmobiles shall be warranted for a term of one (1) year from the date of purchase, plus a special early-season extension (if applicable).
2. All Yamaha snowmobile clutch components are warranted against abnormal wear for one (1) year from the date of purchase, plus a special early-season extension (if applicable).

DURING THE PERIOD OF WARRANTY any authorized Yamaha snowmobile dealer will, free of charge, repair or replace, at Yamaha's option, any part adjudged defective by Yamaha due to faulty workmanship or material from the factory. Parts used in warranty repairs will be warranted for the balance of the snowmobile's warranty period. All parts replaced under warranty become the property of Yamaha Motor Corporation, U.S.A.

GENERAL EXCLUSIONS from this warranty shall include any failures to the machine caused by:

1. Competition, racing, or non-Yamaha authorized rental use.
2. Operation on surfaces other than snow or ice.
3. Installation of parts or accessories that are not qualitatively equivalent to genuine Yamaha parts.
4. Abnormal strain, neglect, or abuse.
5. Lack of proper maintenance.
6. Accident or collision damage.
7. Modification to original parts.

SPECIFIC EXCLUSIONS from this warranty shall include parts replaced due to normal wear or routine maintenance including oil, spark plugs, clutch drive belts, slide runners, and track.

THE CUSTOMER'S RESPONSIBILITY under this warranty shall be to:

1. Operate and maintain the snowmobile as specified in the appropriate Owner's Manual.
2. Give notice to an authorized Yamaha snowmobile dealer of any and all apparent defects within ten (10) days after discovery, and make the machine available at that time for inspection and repairs at such dealer's place of business. You may locate your nearest authorized Yamaha dealer through your local telephone directory.

WARRANTY TRANSFER: To transfer any remaining warranty from the original purchaser to any subsequent purchaser, it is imperative that the machine be inspected and registered for warranty by an authorized Yamaha snowmobile dealer. In order for this warranty to remain in effect, this inspection and registration must take place within ten (10) days after ownership transfer. An inspection and registration fee will be charged for this service.

EMISSION CONTROL SYSTEM WARRANTY

Yamaha Motor Corporation, USA also warrants to the ultimate purchaser and each subsequent purchaser of each 2006 and later model Yamaha snowmobile covered by this warranty that the vehicle is designed, built, and equipped so as to conform at the time of sale with all U.S. emissions standards applicable at the time of manufacture and that it is free from defects in materials and workmanship which would cause it not to meet these standards within the period listed immediately below. Failures other than those resulting from defects in material or workmanship which arise solely as a result of owner abuse and/or lack of proper maintenance are not covered by this warranty.

All Models

Thirty (30) months from the original purchase date

YAMAHA MOTOR CORPORATION, U.S.A. MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE OBLIGATIONS AND TIME LIMITS STATED IN THIS WARRANTY ARE HEREBY DISCLAIMED BY YAMAHA MOTOR CORPORATION, U.S.A. AND EXCLUDED FROM THIS WARRANTY.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. ALSO EXCLUDED FROM THIS WARRANTY ARE ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING LOSS OF USE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

SPECIAL EARLY-SEASON WARRANTY EXTENSION

A special warranty extension is available for all new Yamaha snowmobiles purchased between June 1 and December 1.

All new Yamaha snowmobiles purchased between June 1 and December 1 will have the warranty extended to November 30 of the following year.

YAMAHA MOTOR CORPORATION, U.S.A.
Post Office Box 6555
Cypress, California 90630

WARRANTY QUESTIONS AND ANSWERS

Q. What costs are my responsibility during the warranty period?
A. The customer's responsibility includes all costs of normal maintenance services, non-warranty repairs, accident and collision damages, as well as oil, spark plugs, clutch drive belts, and slide runners.

Q. What are some examples of "abnormal" strain, neglect, or abuse?
A. These terms are general and overlap each other in areas. Specific examples include: Running the machine out of oil, hitting an object submerged under snow, operation on surfaces other than snow or ice, operating the machine with a broken or damaged part which causes another part to fail, and so on. If you have any specific questions on operation or maintenance, please contact your dealer for advice.

Q. May I perform any or all of the recommended maintenance shown in the Owner's Manual instead of having the dealer do them?
A. Yes, if you are a qualified snowmobile mechanic and follow the procedures specified in the Owner's and Service Manual. We do recommend, however, that items requiring special tools or equipment be done by a Yamaha snowmobile dealer.

Q. Under what conditions is the clutch not covered by warranty?
A. Clutches as well as clutch components wear with use. Normal wear is not covered under warranty such service is the customer's responsibility. Abnormal wear is, however, covered for one (1) year from the date of purchase. Your Yamaha snowmobile dealer possesses criteria as to what constitutes abnormal wear.

Q. Will the warranty be void or canceled if I do not operate or maintain my new Yamaha exactly as specified in the Owner's Manual?
A. No. The warranty on a new Yamaha cannot be "voided" or "canceled." However, if a particular failure is caused by operation or maintenance other than as shown in the Owner's Manual, that failure may not be covered under warranty.

Q. What responsibility does my dealer have under this warranty?
A. Each Yamaha snowmobile dealer is expected to:
1. Completely set up every new machine before sale.
2. Explain the operation, maintenance, and warranty requirements to your satisfaction at the time of sale, and upon your request at any later date.
3. In addition, each Yamaha snowmobile dealer is held responsible for his setup, service and warranty repair work.

Q. Whom should I contact if I have further questions about this warranty?
A. Your Yamaha snowmobile dealer has the information and experience necessary to answer almost any questions about this warranty. If the dealer is not able to do so, he is expected to contact Yamaha Motor Corporation, U.S.A., for clarification or assistance.

CUSTOMER SERVICE

If your machine requires warranty service, you must take it to any authorized Yamaha snowmobile dealer within the continental United States. Be sure to bring your warranty identification card or other valid proof of the original date of purchase. If a question or problem arises regarding warranty, first contact the owner of the dealership. Since all warranty matters are handled at the dealer level, this person is in the best position to help you. If you are still not satisfied and require additional assistance, please write:

YAMAHA MOTOR CORPORATION, U.S.A.
CUSTOMER RELATIONS
DEPARTMENT
P.O. Box 6555
Cypress, California 90630

When contacting Yamaha Motor Corporation, U.S.A. be sure to include the model, serial number, names, dates, and receipts.

CHANGE OF ADDRESS

The federal government requires each manufacturer of a motor vehicle to maintain a complete, up-to-date list of all first purchasers against the possibility of a safety-related defect and recall. This list is compiled from the purchase registrations sent to Yamaha Motor Corporation, U.S.A. by the selling dealer at the time of your purchase.

If you should move after you have purchased your new snowmobile, please advise us of your new address by sending a postcard listing your snowmobile model name, engine serial number, dealer number (or dealer's name) as it is shown on your warranty registration identification, your name and new mailing address. Mail to:

YAMAHA MOTOR CORPORATION, U.S.A.
WARRANTY DEPARTMENT
P.O. Box 6555
Cypress, California 90630

This will ensure that Yamaha Motor Corporation, U.S.A. has an up-to-date registration record in accordance with federal law.

ESU12510

YAMAHA EXTENDED SERVICE (Y.E.S.)

Keep your Yamaha protected even after your warranty expires with genuine Yamaha Extended Service (Y.E.S.).

- Y.E.S. is designed and administered by Yamaha Motor Corporation to provide maximum owner satisfaction. You get uninterrupted factory-backed coverage for extra peace of mind.
- Y.E.S. is flexible. You choose the plan that's right for you: 12 months, 24 months, 36 months, or every 48 months (on selected models) beyond your warranty period.
- Y.E.S. is designed and administered by the same Yamaha people who handle your warranty—and it shows in the comprehensive coverage benefits. There are no mileage limitations, and Y.E.S. covers manufacturing defects just like the warranty. See the sample contract at your Yamaha dealer to see how comforting uninterrupted factory-backed protection can be.
- You don't have to pay anything for covered repairs. There's no deductible to pay, and repairs aren't "pro-rated." You don't have any "out-of pocket" expenses for covered repairs.
- In addition, Travel and Recreation Interruption Protection (TRIP) is included at no extra cost. TRIP gives you up to $150 reimbursement per occurrence for any reasonable expenses you incur because your Yamaha needs covered service: replacement vehicle rental, emergency towing, phone calls, even food and lodging when you are away from home. This superb coverage goes into effect when you purchase Y.E.S., so it applies to any warranty repairs as well as covered repairs during your entire Y.E.S. plan period.
- Y.E.S. coverage is honored at any authorized Yamaha dealer nationwide.
- Y.E.S. coverage is transferable to a new owner if you sell or trade-in. That can make your Yamaha much more valuable!

This excellent Y.E.S. plan coverage is only available to Yamaha owners like you, and only while your Yamaha is still within the Yamaha Limited Warranty period. So visit your authorized Yamaha dealer to get all the facts. He can show you how easy it is to protect your investment with Yamaha Extended Service.

We urge you to act now. You'll get the excellent benefits of TRIP coverage right away, and you'll rest easy knowing you'll have strong factory-backed protection even after your Yamaha Limited Warranty expires. See your dealer today!

A special note:

If visiting your dealer isn't convenient, contact Yamaha toll free at 1-866-937-3983 (866 YES-EXTD) or visit our web site. All you need to do is provide your vehicle's Primary ID number (your Tunnel number). We'll be happy to help you get the Y.E.S. coverage you need.

Yamaha Service Marketing
P.O. Box 6555
Cypress, CA 90630
1-866-937-3983
www.yamaha-motor.com

Index

2-up adjusting blocks, adjusting 31
A
Air filter, checking 55
Auxiliary DC jack (PZ50VT) 18
B
Backrest (PZ50VT) 22
Battery 73
Brake and parking brake 64
Brake lever 19
Break-in 37
C
Center shock absorber and rear torsion springs, adjusting spring preload 29
Control rods, adjusting (PZ50VT) 32
Coolant temperature warning indicator 16
Cooling system 60
D
Drive and reverse indicator lights (PZ50RT / PZ50GT / PZ50MT / PZ50VT) 14
Drive chain housing 63
Drive guard 21
Drive select switch (PZ50RT / PZ50GT / PZ50MT / PZ50VT) 17
Drive track and slide runners 68
Drive track, high-profile pattern 70
Drive track life, maximizing 41
Driving 42
E
Engine idling speed, adjusting 53
Engine oil and oil filter cartridge 56
Engine overheating prevention system 10
Engine stop switch 17
F
Fittings and fasteners 73
Fuel 24
Fuel level warning indicator 15
Fuel meter and grip/thumb warmer level indicator 14
Fuse, replacing 74
G
General maintenance and lubrication chart 47
Grip/thumb warmer adjustment switch 18
H
Headlight beam switch 18
Headlight beams, adjusting 72
Headlight bulb, replacing 71
High beam indicator light 13
High-altitude settings 56
I
Identification numbers 84
K
Knock control system indicator light 13
L
Location of the important labels 1
Low coolant temperature indicator light 13
Lubrication 71
M
Main switch 10
O
Oil level warning indicator 16
P
Parking brake lever 19
Part locations 7
Passenger grip warmer switch (PZ50VT) 22
Periodic maintenance chart for the emission control system 45
Pre-operation check list 34
R
Rear carrier (PZ50VT) 23
Riding your snowmobile 37
S
Safety information 5
Self-diagnosis device 16
Shock absorber, rear, adjusting compression damping force (PZ50RT) 31
Shock absorbers, front, adjusting air pressure (PZ50RT) 26
Shock absorbers, front, adjusting damping forces (PZ50GT) 28
Shock absorbers, front, adjusting spring preload (PZ50 / PZ50GT / PZ50MT / PZ50VT) 25
Shroud and covers 20
Shroud and covers, removing and installing 49
Shroud latches (PZ50VT) 19

Index

Skis and ski runners 66
Spark plugs, checking 52
Specifications 81
Speedometer unit 11
Starting the engine 36
Steering system 67
Stopping the engine 43
Storage 79
Storage pouch 22
Strap (PZ50MT) 41
Suspension 25
T
Throttle cable free play, adjusting (PZ50 / PZ50RT / PZ50GT / PZ50MT) 54
Throttle cable free play, checking (PZ50VT) 54
Throttle lever 10
Throttle override system (T.O.R.S.) 10
Throttle override system (T.O.R.S.), checking 54
Tool kit 49
Transporting 43
Troubleshooting 76
V
Valve clearance 56
V-belt 61
V-belt holder (PZ50VT) 21

YAMAHA MOTOR CO., LTD.
PRINTED IN JAPAN
2008.05-1.0×2 CR
PRINTED ON RECYCLED PAPER